BEC 9800VN

GigaConnect®
Wireless-N VoIP Active Ethernet Point-to-Point Fiber Gateway

User Manual

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CHAPTER 1: INTRODUCTION

Introduction to your Router

Congratulations on your purchase of the **BEC 9800VN (Wireless-N VoIP Active Ethernet Point-to-Point Fiber Gateway).** This gateway provides ultra-fast connectivity (FTTP/FTTH) – with uniquely Small Form Factor Pluggable (SFP) interface that can support 100Base or 1000Base connectivity in a box. With WAN throughput in excess of 900Mbps and one USB ports on the rear of the router will support 3G/4G LTE services from selected dongles for high-speed mobile connectivity. Failover between fixed line and mobile connectivity also quickly and smoothly ensures maximum Internet uptime. The BEC 9800VN is designed for home and office environment extending reliable, high-speed, and long-reach last-mile connectivity to people living and working building.

With an integrated 802.11n wireless access point and 4-port Gigabit Ethernet LAN ports, the gateway enables faster wireless speeds of up to 300Mbps and LAN connection 10 times faster than regular 10/100Mpbs Ethernet LAN. The BEC 9800VN provides a unique Management Center, enabling users to monitor 3G/4G LTE signal strength, bandwidth, download speed, and much more.

Furthermore, the BEC 9800VN supports remote management which facilitate FTTH service provider deliver more efficient management. The gateway leverages the extraordinary bandwidth to deliver high-speed Internet applications to home and office users. The full-featured fibre router providing is an ideal solution for FTTH deployments.

FTTH Applications

The BEC 9800VN can be used for a point-to-point fibre access network. Since the Fibre WAN interface allows faster rates over even longer distances, it can support Telcom operators or ISPs to provide high quality and reliable Internet broadband services to either business users or home users. The 4-port Gigabit Switch incorporated into the BEC 9800VN enables blistering LAN transfer rates for multimedia applications such as interactive gaming, IPTV video streaming and real-time audio.

Wireless Mobility and Security

With an integrated 802.11n Wireless Access Point, this router delivers up to 3 times the wireless coverage of a 802.11b/g network device, so that wireless access is available everywhere in the house or office. If your network requires wider coverage, the built-in Wireless Distribution System (WDS) allows you to expand your wireless network without additional wires or cables. BEC 9800VN also supports the Wi-Fi Protected Setup (WPS) standard and allows users to establish a secure wireless network just by pressing a button. Multiple SSIDs allow users to access different networks through a single access point. Network managers can assign different policies and functions for each SSID, increasing the flexibility and efficiency of the network infrastructure.

IPv6 Supported

Internet Protocol version 6 (IPv6) is a version of the Internet Protocol that is designed to succeed IPv4. IPv6 has a vastly larger address space than IPv4. The router is already supporting IPv6, you can use it in IPv6 environment no need to change device. The dual-stack protocol implementation in an operating system is a fundamental IPv4-to-IPv6 transition technology. It implements IPv4 and IPv6

protocol stacks either independently or in a hybrid form. The hybrid form is commonly implemented in modern operating systems supporting IPv6.

Quick Start Wizard

Support a WEB GUI page to install this device quickly. With this wizard, simple steps will get you connected to the Internet immediately.

Firmware Upgradeable

Device can be upgraded to the latest firmware through the WEB based GUI.

Features & Specifications

- WAN Interface supports up to 1000Mbps downstream and upstream wire-speed (over 900Mbps) rates
- Dual WAN ports (SFP Cage & Ethernet WAN)
- SFP interface supports 100Base or 1000Base fibre connectivity
- Extra Rj-45 EWAN WAN port for connecting to ADSL/VDSL/Cable/Fibre modem devices
- 4-port Gigabit LAN Switch
- IPv6 ready (IPv4/IPv6 dual stacks)
- Auto failover feature to ensure an always-on WAN connectivity
- 802.11 wireless AP with high-speed wireless connection rate of up to 300Mbps
- Support Wi-Fi Protecyed Setup (WPS) and WPA-PSK/WPA2-PSK
- Multiple wireless SSIDs with wireless guest access and client isolation
- Wi-Fi Protected Access (WPA-PSK/ WPA2-PSK) and Wired Equivalent Privacy (WEP)
- Two FXS ports for connecting to regular telephones
- Supports FAX Transmission: T.38 fax relay, G.711 pass-through
- QoS for traffic prioritization and bandwidth management

Network Protocols and Features

- IPv4, IPv6, IPv4 / IPv6 dual stack
- NAT,PAT, static(v4/v6) routing and RIP-1/2
- IPv6 stateless / stateful address auto-configuration
- IPv6 router advertisement
- IPv6 over PPP
- DHCPv6
- Universal Plug and Play (UPnP) compliant

- SNTP, DNS relay, Dynamic Domain Name System(DDNS)
- Virtual server and DMZ
- IGMP proxy and IGMP snooping for video service
- MLD proxy and MLD snooping for video service
- Management based-on HTTP, port number and IP address
- Supports Port-based Virtual LAN (VLAN)
- File sharing with SMB (Samba) and FTP
- Diagnostic tool

Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- DoS attack prevention including Land Attack, Ping of Death, etc
- Access control
- IP / MAC address / URL / Application Filtering
- Password protection for system management
- Parental Control
- VPN pass-through

Quality of Service Control

- Traffic prioritization management based-on Protocol, Port Number and IP Address (IPv4/ IPv6)
- Supports the DiffServ approach
- Traffic bandwidth control, DSCP marking, and 802.1p marking based-on IP protocol, port number and IP address
- Supports 802.1p/q
- Supports 802.1ad (Q-in-Q)

Wireless LAN

- Compliant with IEEE 802.11 b/ g/ n standards
- Backward compatible with IEEE 802.11b and 802.11g standards
- 2.4 GHz - 2.484GHz frequency range
- Up to 300 Mbps wireless operation rate
- WPS (Wi-Fi Protected Setup) for easy setup
- On / Off Wireless with WPS push button
- 64 / 128 bits WEP supported for encryption

- Wireless Security with WPA-PSK, WPA2-PSK, and Mixed WPA / WPA2-PSK support
- WDS repeater function support
- Multiple SSID
- Wireless MAC filtering

USB Application Server

- Storage/NAS: Samba server, FTP Server

VoIP

- Compliant with SIP standard (RFC3261)
- Supports G.711 A/μ-Law, G.726, G.729 audio codec standards
- Supports telephony features: call waiting, caller ID (DTMF, FSK), speed dial, return call, anonymous call, distinctive ring, Do Not Disturb, three-way conference, volume control, notify for voicemail, Call Detailed Records(CDR)
- Supports voice enhance features: Adaptive jitter buffer, Comfort Noise Generation (CNG), Silence Suppression (VDA), G.168 Echo Cancellation, Packet Loss Concealment
- DTMF Method: Inband, RFC 2833, SIP Info
- FAX Transmission: T.38, G.711 pass-through
- Voice over data, QoS control to ensure higher voice quality

Management

- Quick Installation wizard
- Web-based GUI for remote and local management
- Firmware upgrades and configuration data upload and download via web-based GUI
- Supports DHCP server / client / relay
- Supports SNMP v1, v2, v3, MIB-I and MIB-II
- TR-069 supports remote management
- System log monitoring
- User Access Management Levels

Hardware Specifications

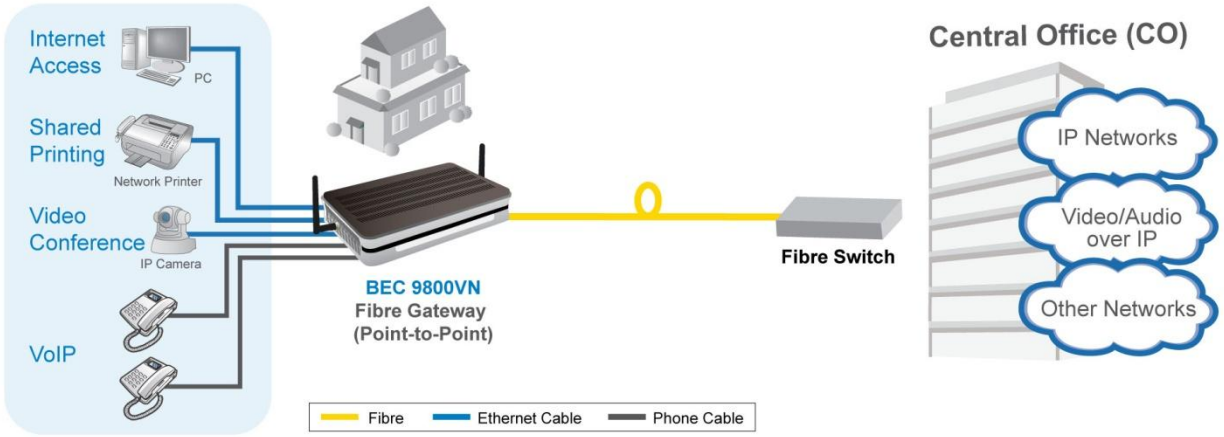
Physical interface

- Wireless Antenna: two (2) detachable antennas
- 1-port Gigabit EWAN (Ethernet WAN)
- 1-port 100/1000BASE SFP Cage (WAN)
- 4-port Gigabit auto-crossover (MDI/MDI-X) Gigabit LAN Ethernet ports
- PoE-PD on Ethernet LAN Port 4
- VoIP: Two (2) RJ-11 FXS interface ports
- USB 2.0 for storage service
- Reset Button
- Wireless On/Off / WPS Push Button
- Power Jack
- Power On/Off Switch

Physical Specifications

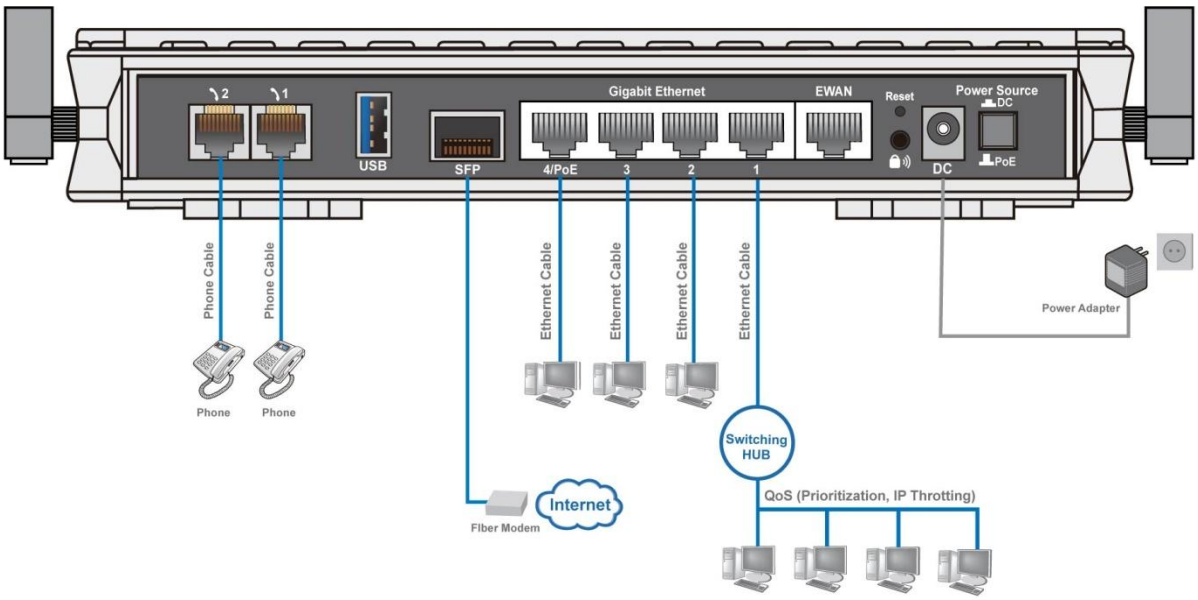
- Dimensions (W*H*D): 9.04" x 6.10" x 1.27"(229.5mm x 155mm x 32.24mm)

Application Diagram



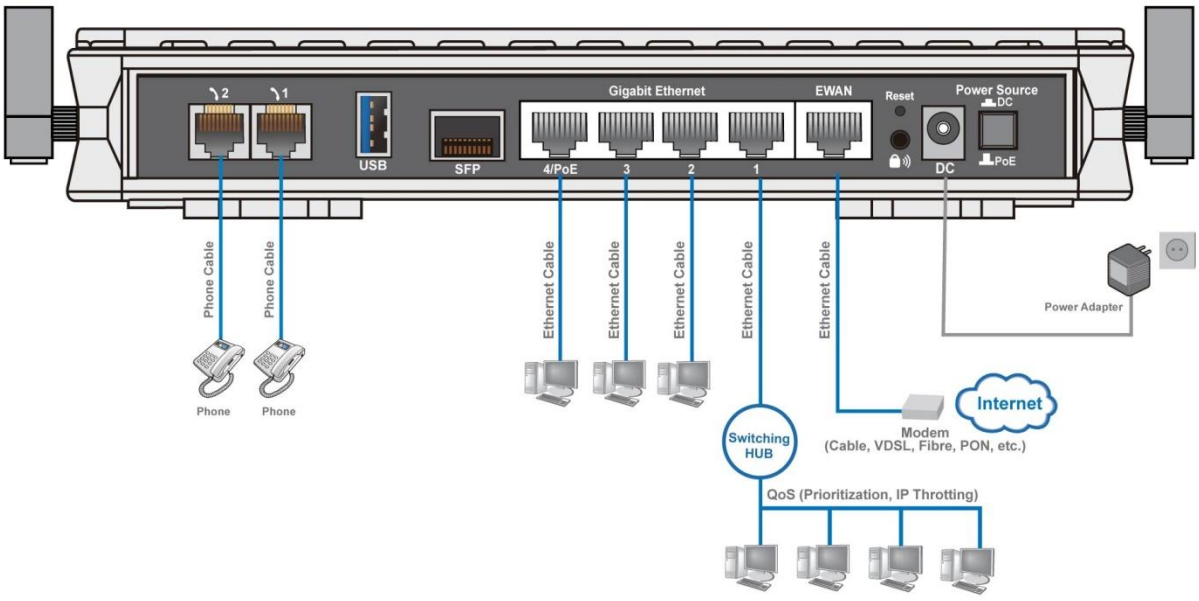
SFP (direct connection to fiber) mode

BEC 9800VN has a SFP interface for direct fibre connection.



Broadband router mode

BEC 9800VN has a Gigabits Ethernet WAN port to connect to your Fibre/ Cable/ xDSL modem.



CHAPTER 2: PRODUCT OVERVIEW

Important Note for Using This Router

Warning

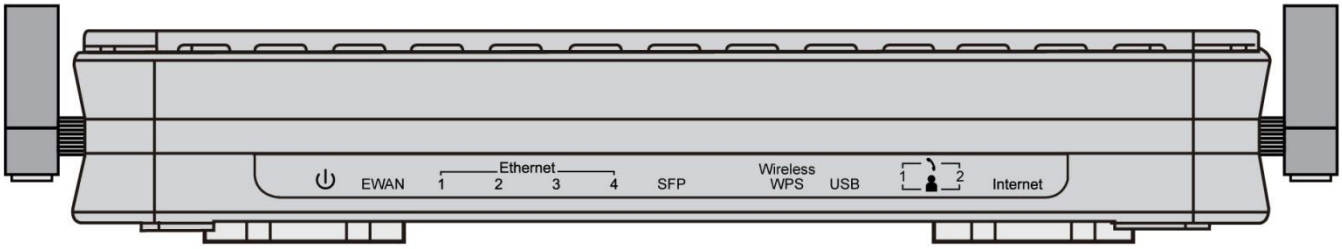
- ✓ Do not use the router in high humidity or high temperature.
- ✓ Do not use the same power source for the BEC 9800VN on other equipment.
- ✓ Do not open or repair the case yourself. If the device becomes too hot, turn off the power immediately and have it repaired at a qualified service center.
- ✓ Avoid using this product and all accessories outdoors.

Attention

- ✓ Place the router on a stable surface.
- ✓ Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router.

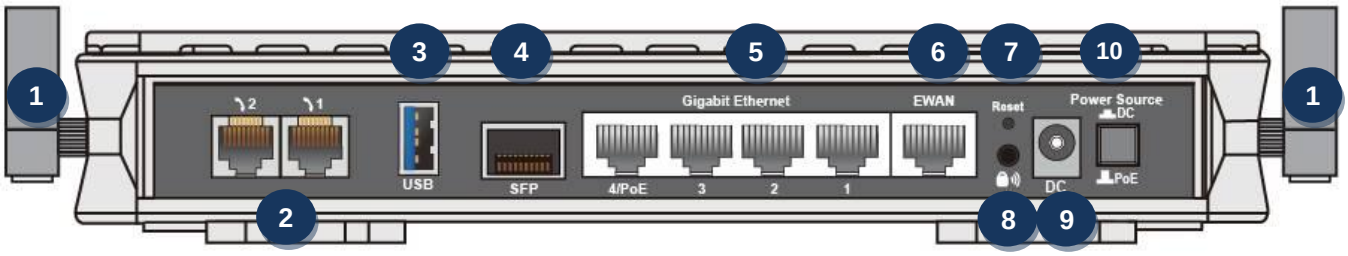
Device Description

Front Panel LEDs



LED	STATUS	DESCRIPTION
Power	Green	System is up and ready
	Red	Boot failure
EWAN	Lit up	BEC 9800VN is successfully connected with a broadband connection device.
	Green	Transmission speed is at Gigabit speed (1000Mbps)
	Orange	Transmission speed is at 10/100Mbps
	Blinking	Data being transmitted/received
Ethernet Port 1-4	Green	Transmission speed is at Gigabit speed (1000Mbps)
	Orange	Transmission speed is at 10/100Mbps
	Blinking	Data being transmitted/received
SFP	Green	SFP fiber connection is ready.
Wireless/WPS	Green	Wireless connection established
	Green blinking	Data being transmitted / received
	Orange	WPS configuration is in progress
USB	Green	Connecting to a USB dongle or a hard drive.
Phone 1 & 2 1 2	Green	Successfully registered and ready to be used.
	Orange	Phone is off-hook, in-use
Internet	Green	IP connected and traffic is passing thru the device.
	Red	IP request failed.
	Off	BEC 9800VN is either in bridged mode or WAN connection not ready.

Rear Panel Connectors



PORT		MEANING
1	**Antenna**	Screw the supplied Wi-Fi antennas onto the antenna connectors on both sides.
2	**Phone (1~2)**	Connect your analog phone to the phone port with a RJ-11 cable.
3	**USB**	Connect an external USB dongle / hard drive for storage, network sharing, etc
4	**SFP Cage**	Insert and gently push the SFP module until it snap into the slot tightly. Auto-sensing SFP (Small Form Factor Pluggable) transceivers 100Base or 1000Base
5	**Gigabit LAN Ethernet (1 ~ 4)**	Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the four LAN ports when connecting to a PC or an office/home network of 10Mbps /100Mbps /1000Mbps
	4/PoE	LAN Port 4 is also featuring 802.3at PoE PD (Power over Ethernet) *1
6	**Gigabit EWAN**	Connect to Fiber/ Cable/ xDSL Modem with a RJ-45 cable
7	**Reset**	After the device is powered on, press it **6 seconds or above**: to restore to factory default settings (this is used when you cannot login to the router, e.g. forgot your password)
8	**WPS & Wireless On/Off**	By controlling the pressing time, users can achieve two different effects: **(1) WPS** * 2**:** Press &hold the button for **less than 6 seconds** to trigger WPS function. **(2) Wireless ON/OFF button**: Press & hold the button for **more than 6 seconds** to On/Off the wireless.
9	**Power**	Connect the supplied Power Adapter to this port.
10	**Power Source**	Power ON/OFF switch (1) **with Power Switch ON:** power up by the supplied DC power adaptor. (2) **with Power Switch OFF:** power up by a PoE

*** Note:**

1. It is required to use a PoE Injector / Device complied with IEEE802.at standard. Using an 802.af standard PoE device will reduce the performance of BEC 9800VN.

2. For WPS configuration, please refer to the WPS section in the User Manual.

Cabling

One of the most common causes of problems is bad cabling. Make sure that all connected devices are turned on. On the front panel of the product is a bank of LEDs. Verify that the LAN Link and LEDs are lit. If they are not, verify that you are using the proper cables.

Make sure that all other devices (e.g. telephones, fax machines, analogue modems) connected to the same telephone line as your BEC router have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and that all line filters are correctly installed in a right way. If the line filter is not correctly installed and connected, it may cause problems to your connection or may result in frequent disconnections.

CHAPTER 3: BASIC INSTALLATION

The router can be configured with your web browser. A web browser is included as a standard application in the following operating systems: Windows 98 / NT /2000 / XP / ME / 7 / Vista, Linux, Mac OS, etc. The product provides an easy and user-friendly interface for configuration.

PCs must have an Ethernet interface installed properly and be connected to the router either directly or through an external repeater hub, and have TCP/IP installed and configured to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is **192.168.1.254** and the subnet mask is **255.255.255.0** (i.e. any attached PC must be in the same subnet, and have an IP address in the range of 192.168.1.1 to 192.168.1.253). The best and easiest way is to configure the PC to get an IP address automatically from the router using DHCP. If you encounter any problems accessing the router's web interface it may also be advisable to **uninstall** any kind of software firewall on your PCs, as they can cause problems accessing the 192.168.1.254 IP address of the router. Users should make their own decisions on how to best protect their network.

Please follow the steps below for your PC's network environment installation. First of all, please check your PC's network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.

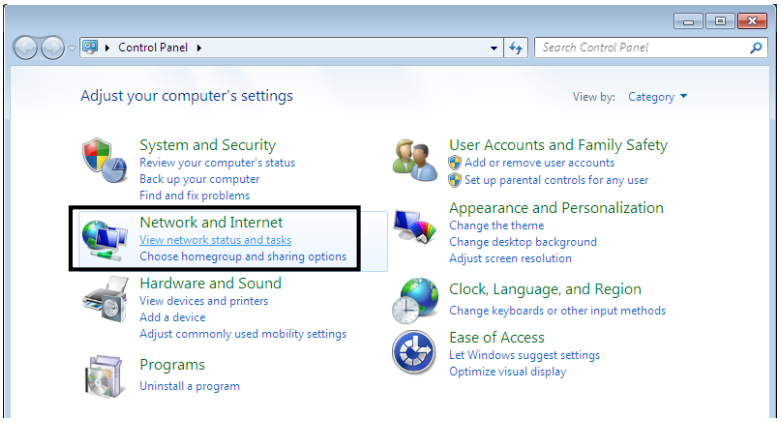
Any TCP/IP capable workstation can be used to communicate with or through the **BEC 9800VN**. To configure other types of workstations, please consult the manufacturer's documentation.

Network Configuration – IPv4

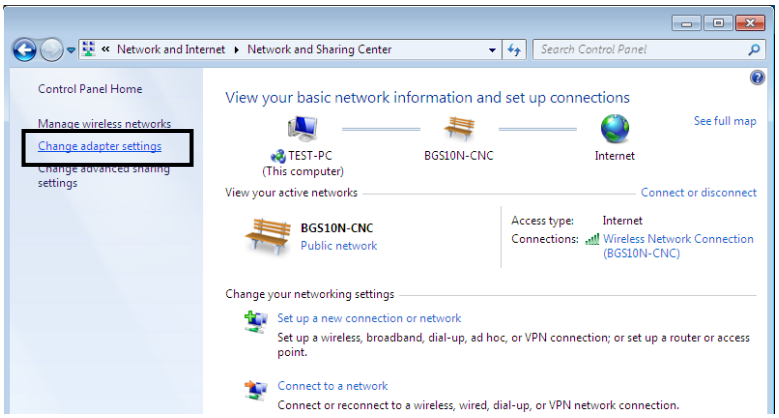
Configuring a PC in Windows 7 (IPv4)

1. Go to **Start**. Click on **Control Panel**.

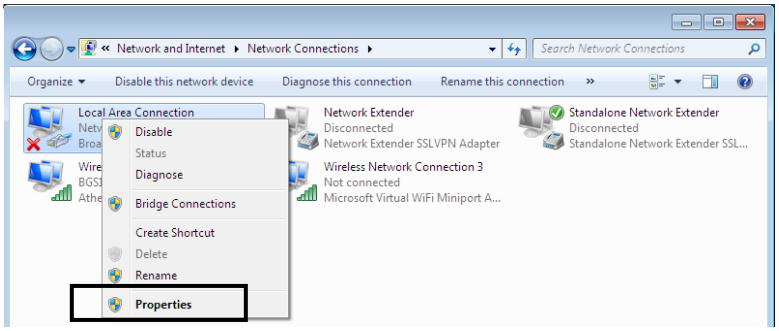
2. Then click on **Network and Internet**.



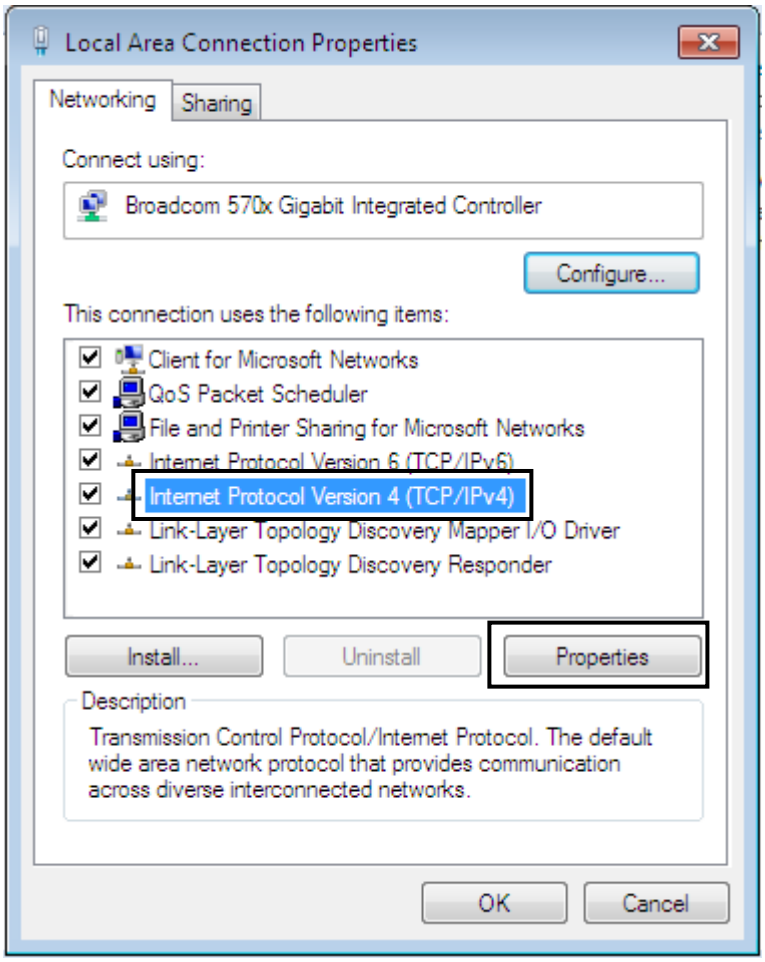
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.


Network and Internet
Network and Sharing Center
Search Control Panel
Control Panel Home
Manage wireless networks
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
TEST-PC
(This computer)
BGS10N-CNC
Internet
View your active networks
Connect or disconnect
BGS10N-CNC
Public network
Access type: Internet
Connections: Wireless Network Connection (BGS10N-CNC)
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.

4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

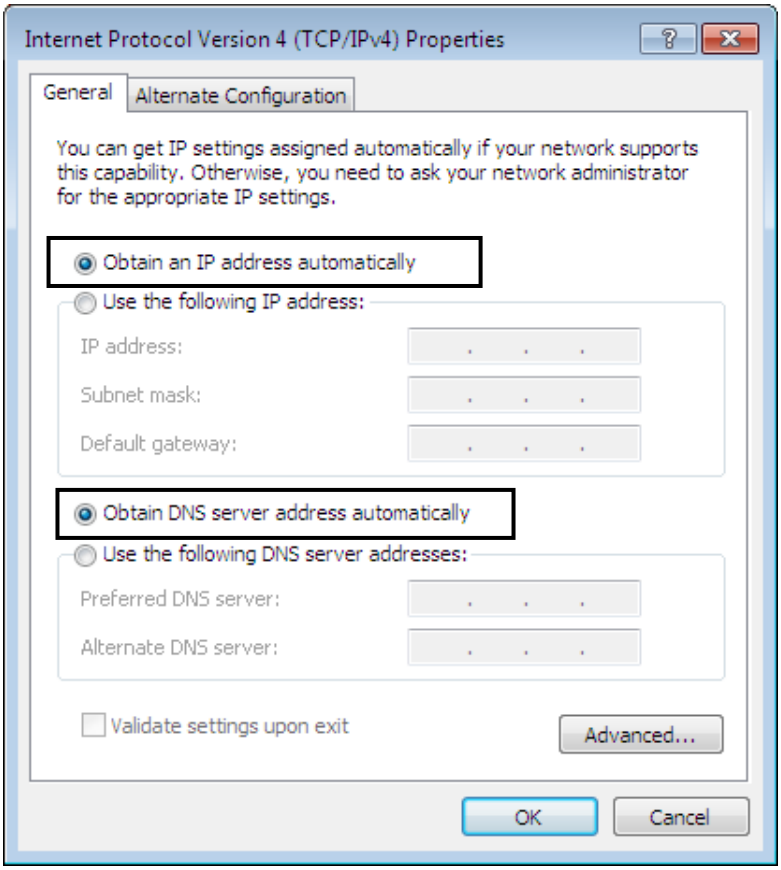


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

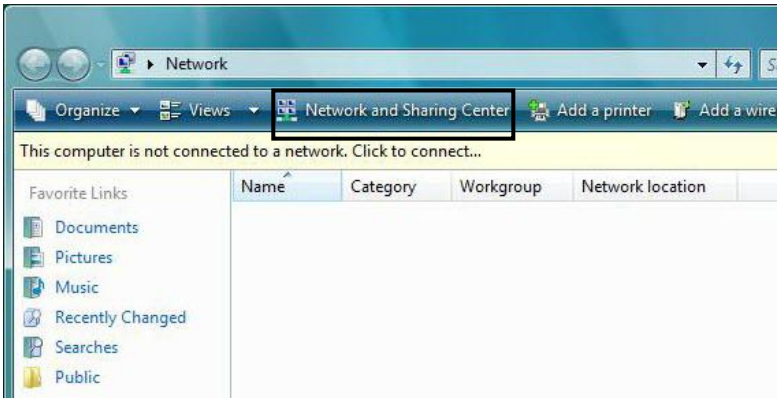
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Configuring a PC in Windows Vista (IPv4)

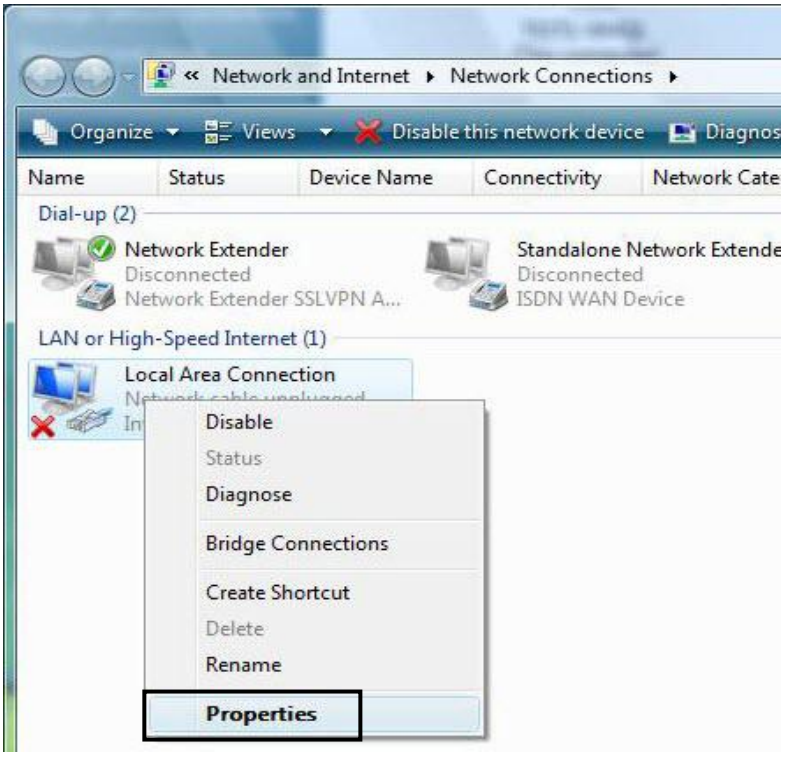
1. Go to **Start**. Click on **Network**.

2. Then click on **Network and Sharing Center** at the top bar.

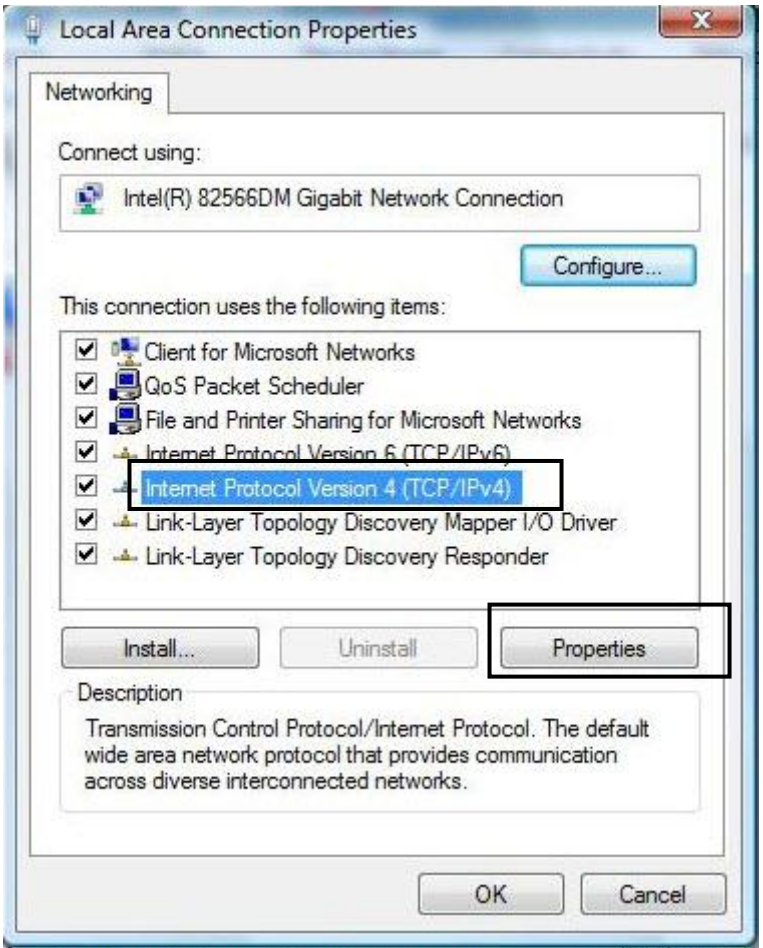


3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.

4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

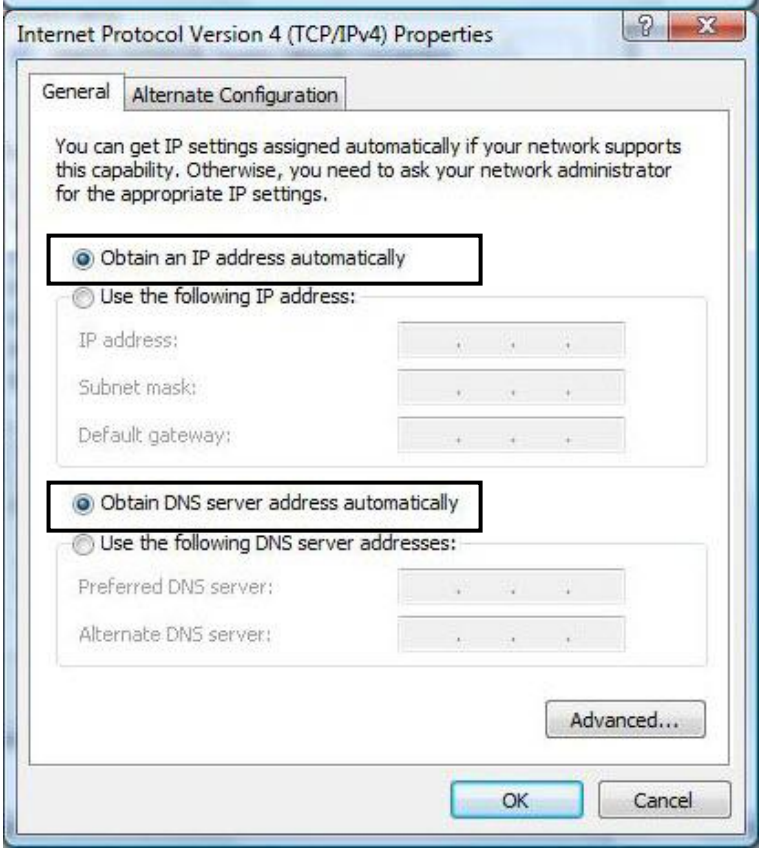


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



6. In the **TCP/IPv4 properties** window, select the Obtain an **IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

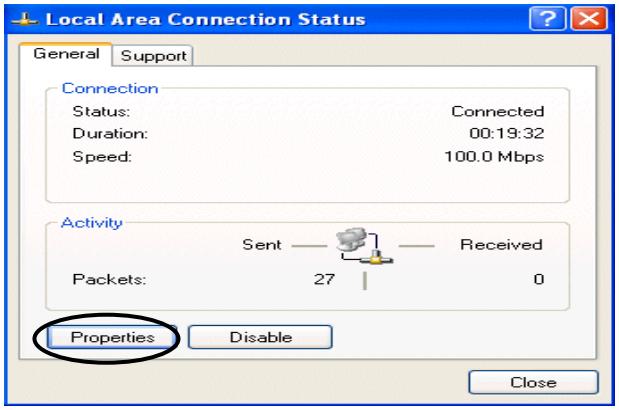
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

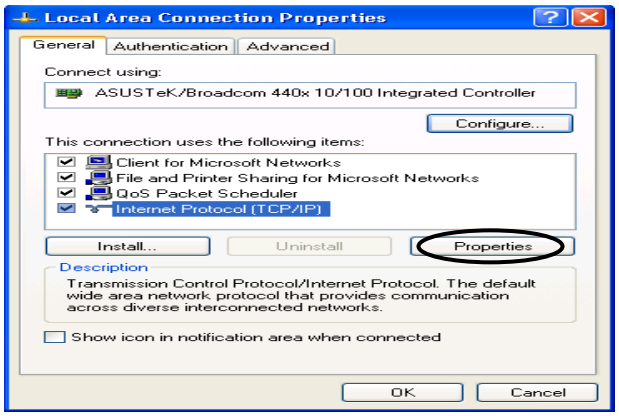
Configuring a PC in Windows XP (IPv4)

1. Go to **Start**. Click on **Control Panel.**
2. Then click on **Network and Internet**.

3. In the **Local Area Connection Status** window, click **Properties**.

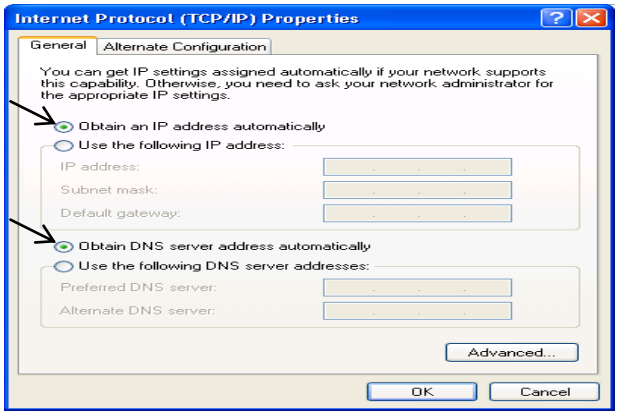


4. Select **Internet Protocol (TCP/IP)** and click **Properties**.


Local Area Connection Properties
General Authentication Advanced
Connect using:
ASUSTeK/Broadcom 440x 10/100 Integrated Controller
Configure...
This connection uses the following items:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
QoS Packet Scheduler
Internet Protocol (TCP/IP)
Install... Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected
OK Cancel

5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

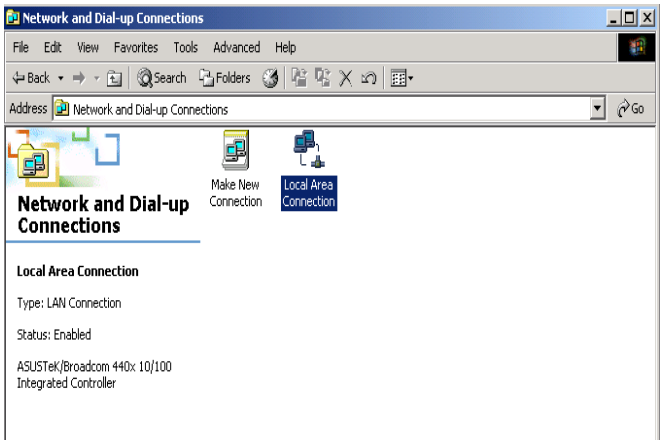
6. Click **OK** to finish the configuration.


Internet Protocol (TCP/IP) Properties
General Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK Cancel

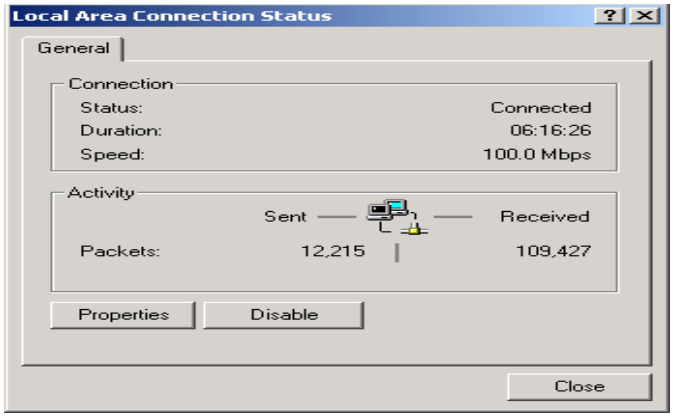
Configuring a PC in Windows 2000 (IPv4)

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network and Dial-up Connections**.

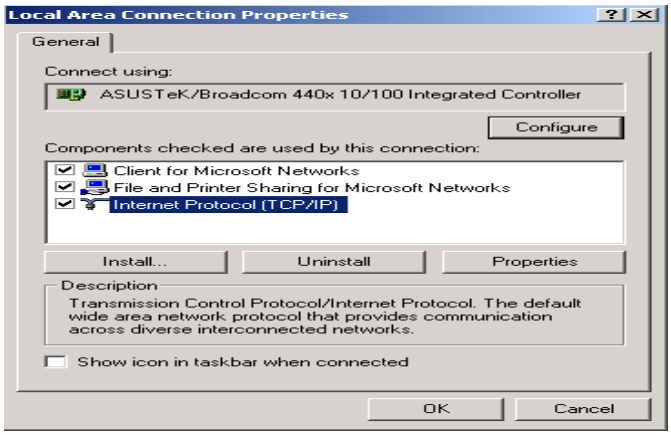
2. Double-click **Local Area Connection**.



3. In the **Local Area Connection Status** window click **Properties**.

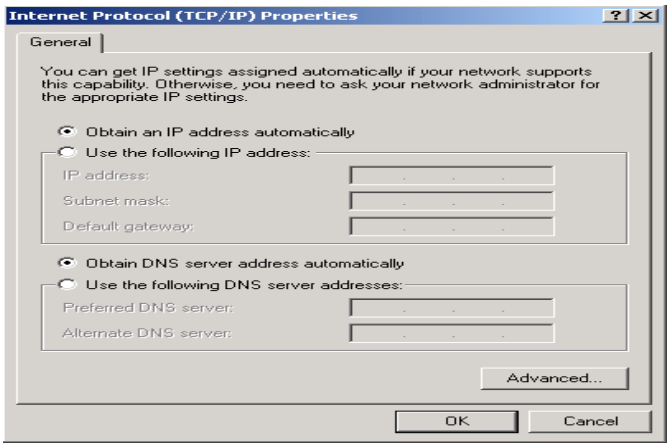


4. Select **Internet Protocol (TCP/IP)** and click **Properties**.



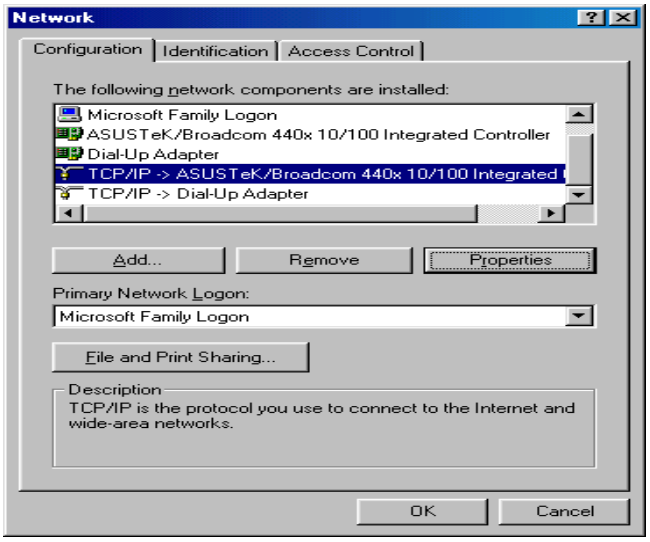
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

6. Click **OK** to finish the configuration.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

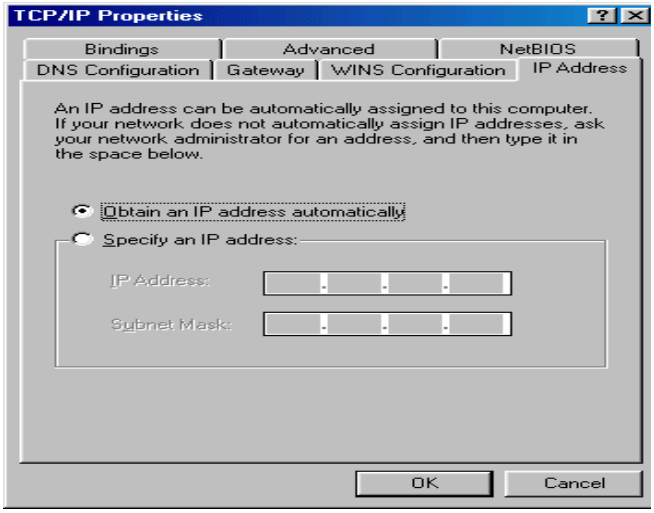
Configuring PC in Windows 98/ME

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Configuration** tab.



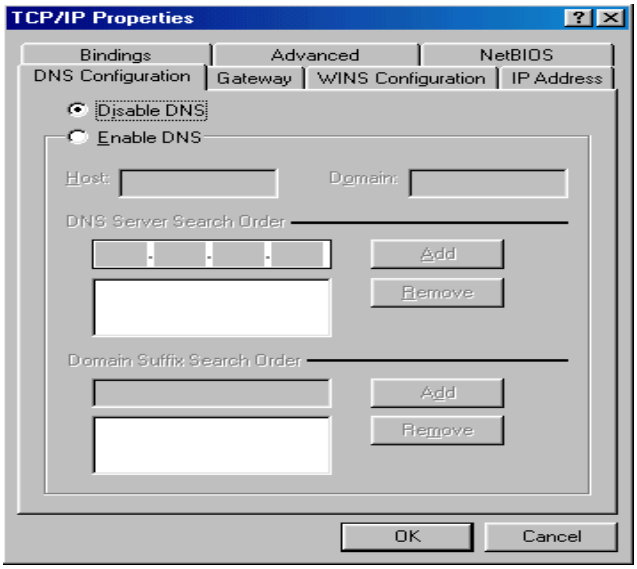
2. Select **TCP/IP ->NE2000 Compatible**, or the name of your Network Interface Card (NIC) in your PC.

3. Select the **Obtain an IP address automatically** radio button.


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
OK
Cancel

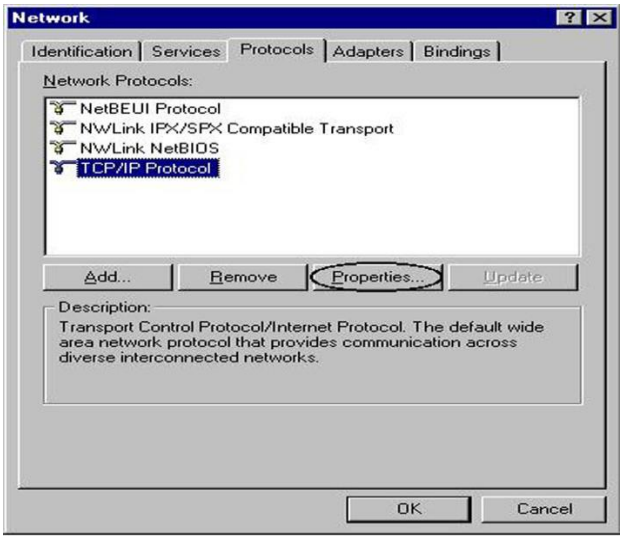
4. Then select the **DNS Configuration** tab.

5. Select the **Disable DNS** radio button and click **OK** to finish the configuration.



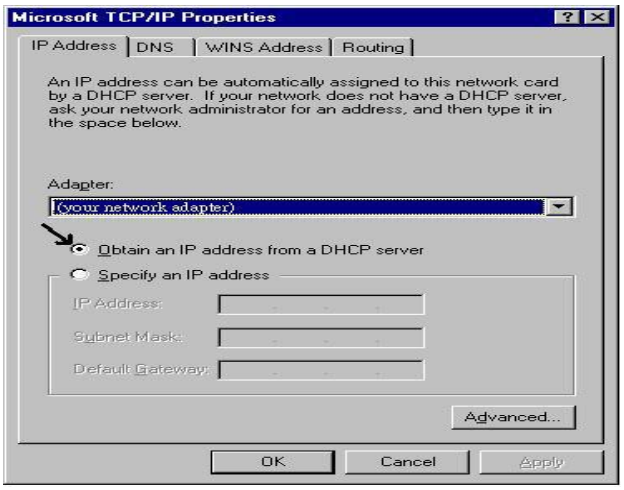
Configuring PC in Windows NT4.0

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Protocols** tab.



2. Select **TCP/IP Protocol** and click **Properties**.

3. Select the **Obtain an IP address from a DHCP server** radio button and click **OK**.

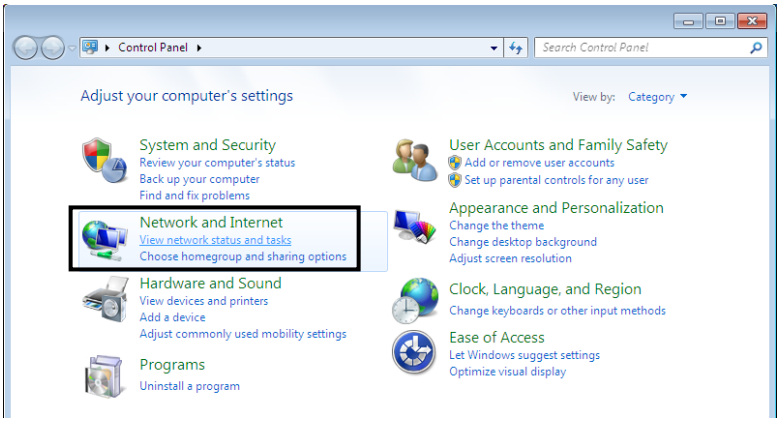

Microsoft TCP/IP Properties
IP Address
DNS
WINS Address
Routing
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.
Adapter:
(your network adapter)
Obtain an IP address from a DHCP server
Specify an IP address
IP Address:
Subnet Mask:
Default Gateway:
Advanced...
OK
Cancel
Apply

Network Configuration – IPv6

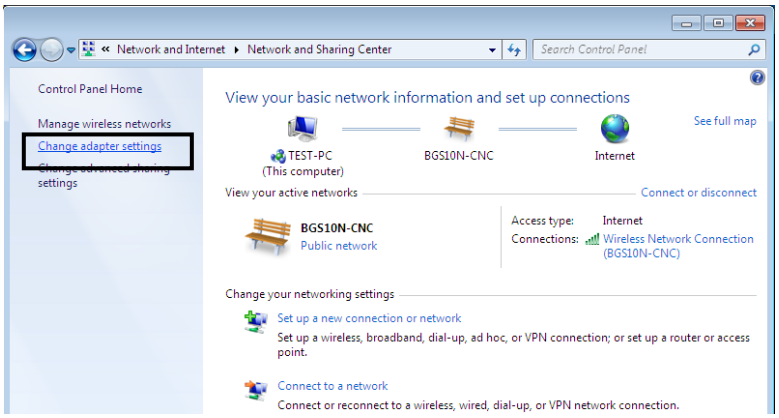
Configuring a PC in Windows 7 (IPv6)

1. Go to **Start**. Click on **Control Panel**.

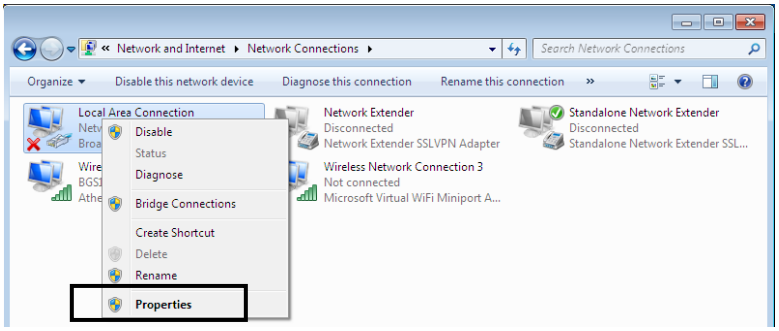
2. Then click on **Network and Internet**.



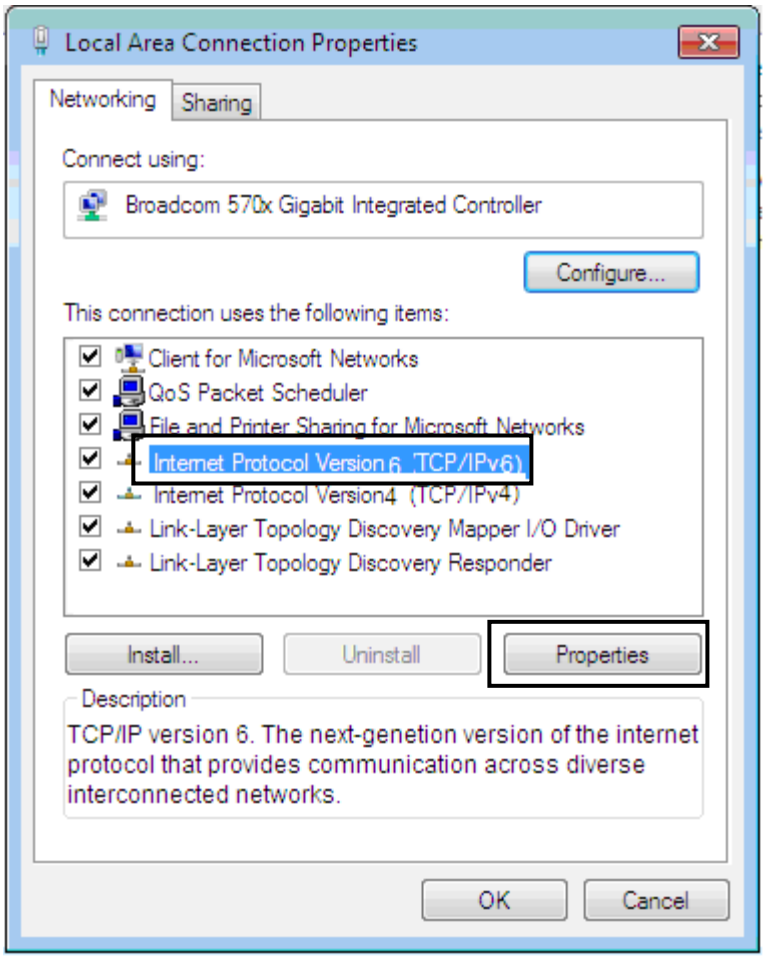
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.


Network and Internet
Network and Sharing Center
Search Control Panel
Control Panel Home
Manage wireless networks
Change adapter settings
settings
View your basic network information and set up connections
See full map
TEST-PC
(This computer)
BGS10N-CNC
Internet
View your active networks
Connect or disconnect
BGS10N-CNC
Public network
Access type: Internet
Connections: Wireless Network Connection (BGS10N-CNC)
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.

4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

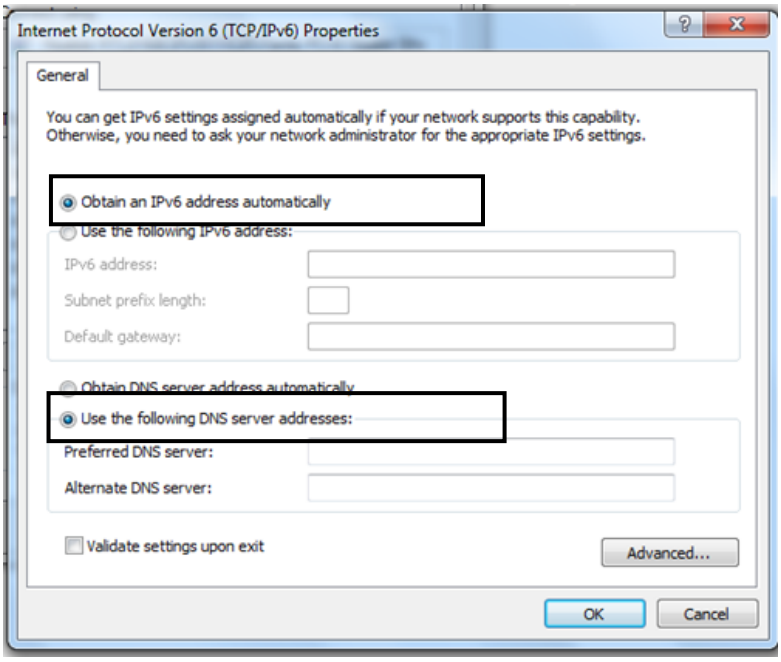


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



6. In the **TCP/IPv6 properties** window, select the **Obtain an IPv6 address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

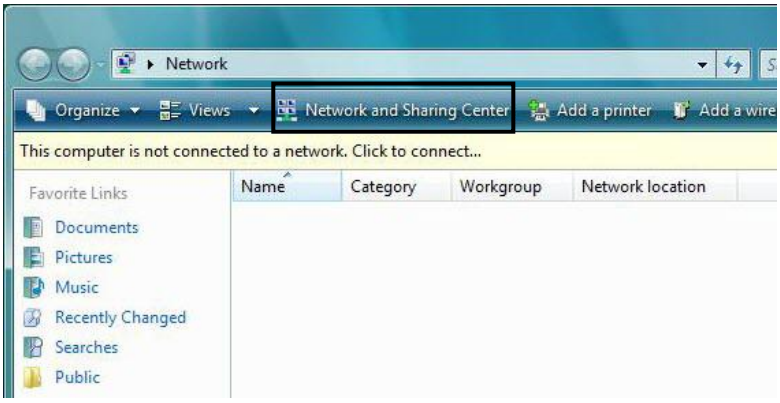
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.


Internet Protocol Version 6 (TCP/IPv6) Properties
General
You can get IPv6 settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IPv6 settings.
Obtain an IPv6 address automatically
Use the following IPv6 address:
IPv6 address:
Subnet prefix length:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Configuring a PC in Windows Vista (IPv6)

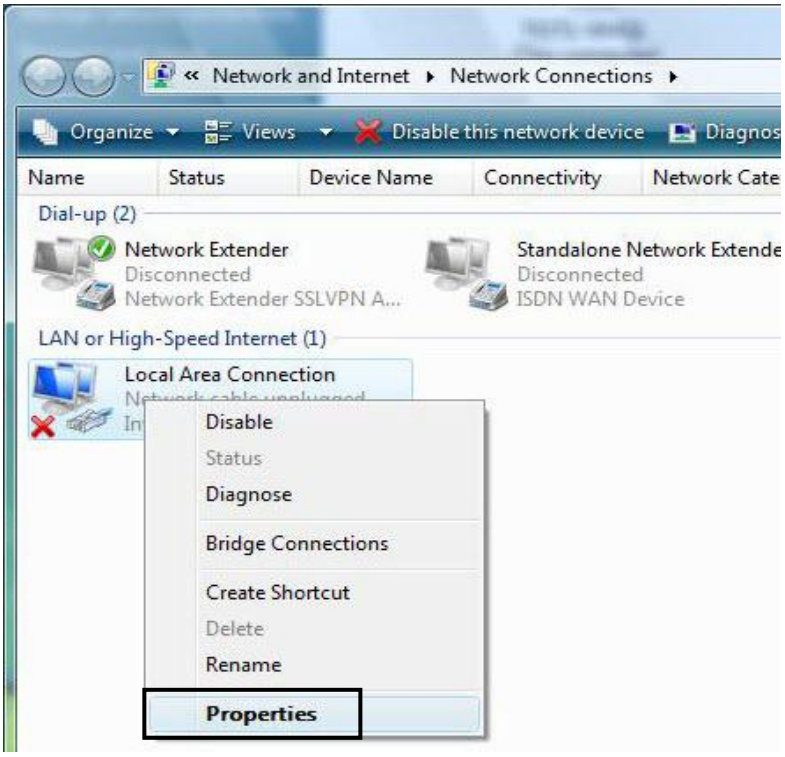
1. Go to **Start**. Click on **Network**.

2. Then click on **Network and Sharing Center** at the top bar.

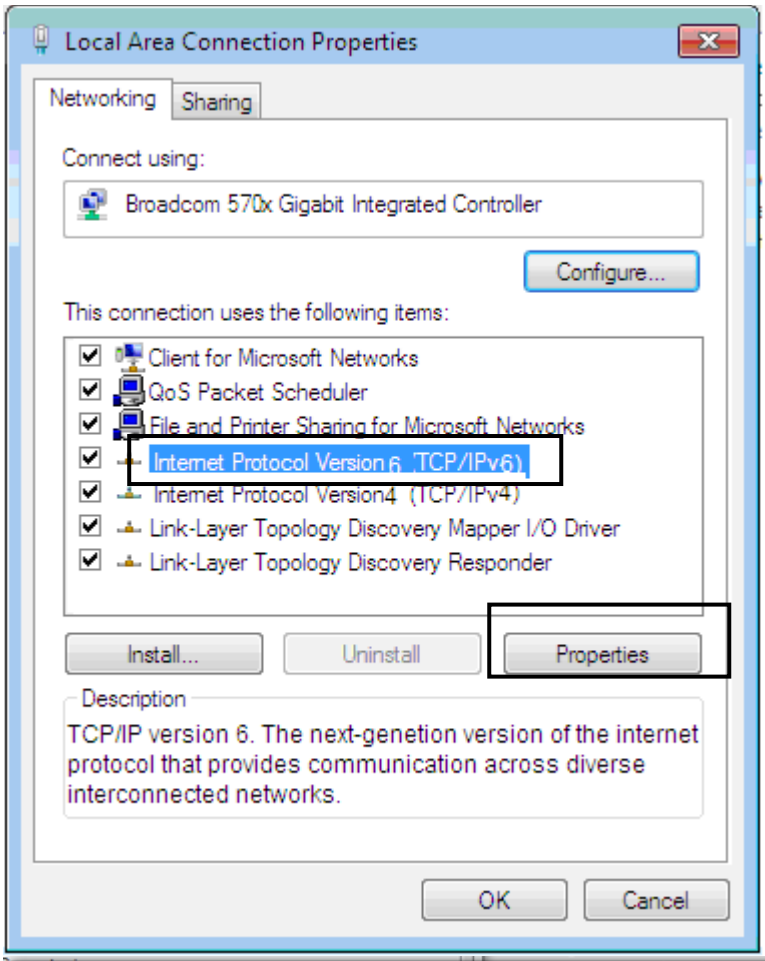


3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.

4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

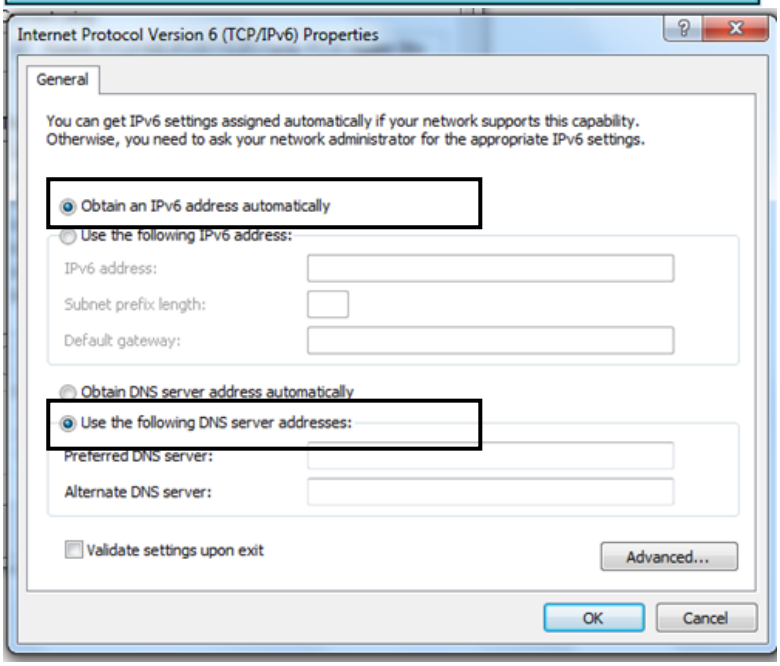


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



6. In the **TCP/IPv6 properties** window, select the Obtain an **IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.

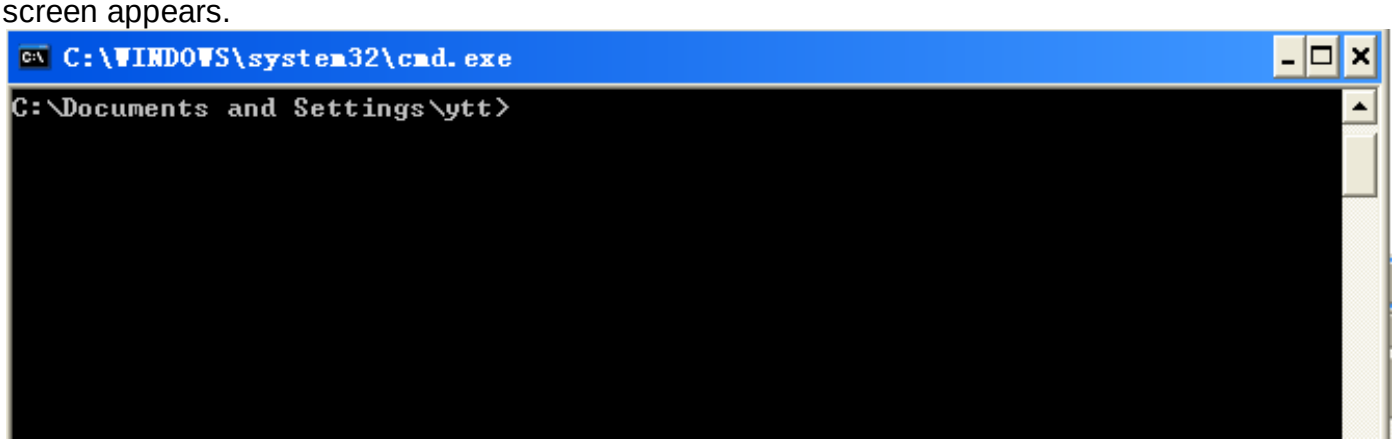

Internet Protocol Version 6 (TCP/IPv6) Properties
General
You can get IPv6 settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IPv6 settings.
Obtain an IPv6 address automatically
Use the following IPv6 address:
IPv6 address:
Subnet prefix length:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Configuring a PC in Windows XP (IPv6)

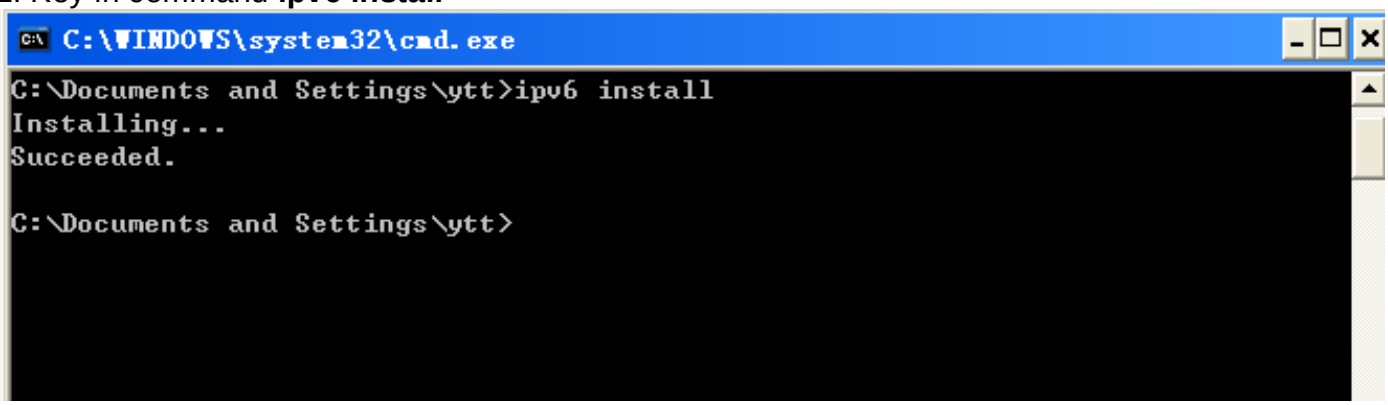
IPv6 is supported by Windows XP, but you need to install it first.

Please follow the steps to install IPv6:

1. On the Desktop, Click **Start** > **Run**, type **cmd**, then press **Enter** key in the keyboard, the following screen appears.



2. Key in command **ipv6 install**



Installation of IPv6 is now completed. Please test it to see if it works or not. .

Default Settings

Before configuring the router, you need to know the following default settings.

Web Interface: (Username and Password)

- ✔ Username: admin
- ✔ Password: admin

The default username and password are "**admin**" and "**admin**" respectively.

If you ever forget the username/password to login to the router, you may press the RESET button up to **6** seconds then release it to restore the factory default settings.

Caution: After pressing the RESET button for more than 6 seconds then release it, to be sure you power cycle the device again.

Device LAN IP Settings

- ✔ IP Address: 192.168.1.254
- ✔ Subnet Mask: 255.255.255.0

DHCP Server:

- ✔ DHCP server is enabled.
- ✔ Start IP Address: 192.168.1.100
- ✔ IP pool counts: 100

Information from Your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) what kind of service is provided such as **EWAN** ((Dynamic IP address, Static IP address, PPPoE, Bridge Mode).

Gather the information as illustrated in the following table and keep it for reference.

PPPoE	Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
Dynamic IP Address	DHCP Client (it can be automatically assigned by your ISP when you connect or be set manually).
Static IP Address	IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is fixed IP address).
Bridge Mode	Pure Bridge

CHAPTER 4: DEVICE CONFIGURATION

Login to your Device

Open your web browser, enter the IP address of your router, which by default is **192.168.1.254**, and click "**Go**", a user name and password window prompt appears.

The default username and password is **"admin"** and **"admin"** respectively for the **Administrator.**

NOTE: This username / password may vary by different Internet Service Providers.

Windows Security
The server 192.168.1.254 at BEC 9800VN requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Congratulations! You have successfully logged on to your **BEC 9800VN.**

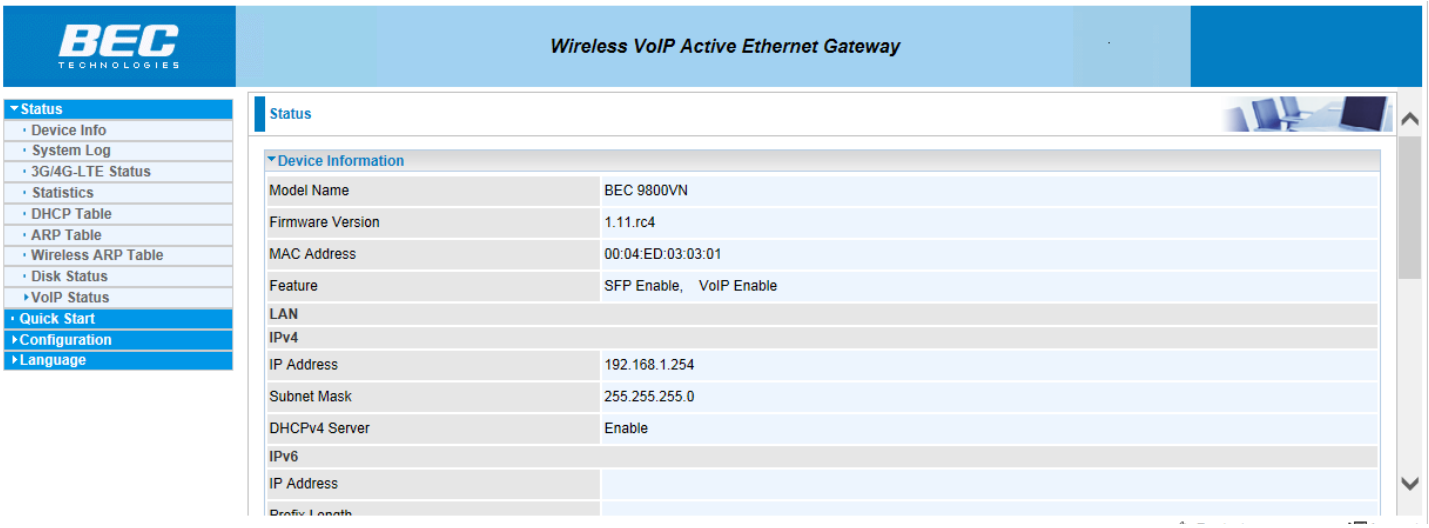
Once you have logged on to your 9800VN via your web browser, you can begin to set it up according to your requirements. On the configuration homepage, the left navigation pane links you directly to the setup pages, which includes:

Section	Status	Quick Start (Wizard Setup)	Configuration	Language
Sub-Items	**Device Info**		**Interface Setup** - Internet - LAN - Wireless - Wireless MAC Filter	
	System Log		**Dual WAN** - General Setting	
	Statistics		**Advanced Setup** - Firewall - Routing - NAT - Static DNS - QoS - Interface Grouping - Port Isolation - Time Schedule	
	DHCP Table		**VoIP** - Basic - Media - Advanced - Speed Dial - Call Features	
	ARP Table		**Access Management** - Device Management - SNMP - Universal Plug & Play (UPnP) - Dynamic DNS - Access Control - Packet Filter - CWMP (TR-069) - Parental Control - SAMBA & FTP Server	
	Wireless ARP Table		**Maintenance** - User Management - Time Zone - License - Firmware & Configuration - System Restart - Diagnostic Tool	
	Disk Status			
	VoIP Status			

Please see the relevant sections of this manual for detailed instructions on how to configure your **BEC 9800VN** gateway.

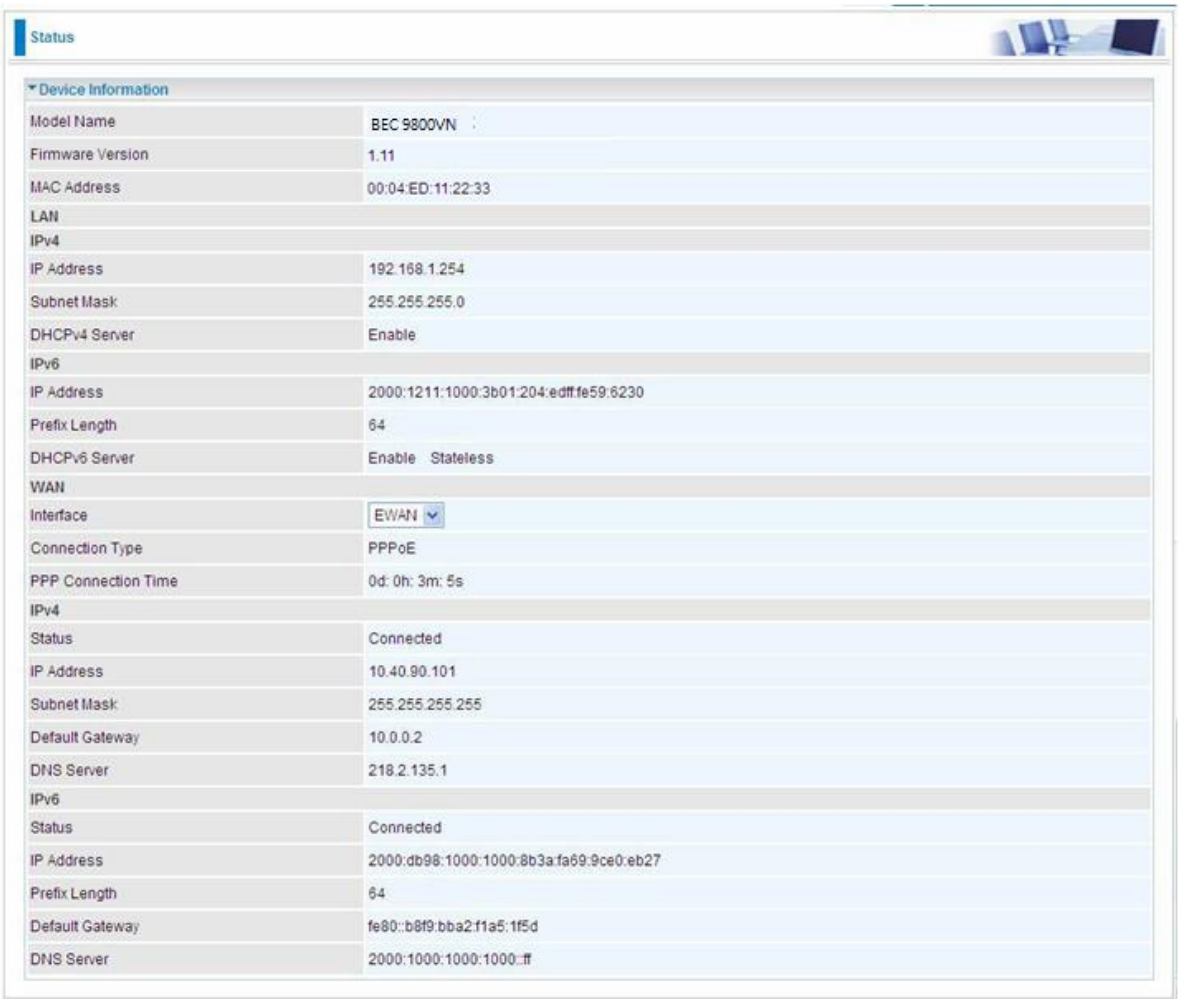
Status

In this section, you can check the router working status, including **Device Info**, **System Log**, **Statistics**, **DHCP Table**, **ARP Table, Wireless ARP Table, Disk Status**, and **VoIP Status**.



Device Info

It contains basic information of the device.



Device Information

Model Name: Name of the router for identification purpose.

Firmware Version: Software version currently loaded in the router

MAC Address: A unique number that identifies the router

LAN

- **IPv4:**

IP Address: LAN port IPv4 address.

Subnet Mask: LAN port IP subnet mask.

DHCPv4 Server: LAN port DHCP role - Enabled, Relay or Disabled.

- **IPv6:**

IP Address: LAN port IPv6 address.

Prefix Length: The prefix length

DHCPv6 Server: The DHCP status.

WAN

Interface: WAN connection options.

Service: The WAN interface service index.

PPP Connection Time: the uptime of the PPP connection.

- **IPv4:**

Status: The connection status, either being connected or not in connected.

IP Address: WAN port IP address.

Subnet Mask: WAN port IP subnet mask.

Default Gateway: The IP address of the default gateway.

DNS Server: DNS information.

- **IPv6:**

Status: The IPv6 connection status.

IP Address: WAN port IPv6 address.

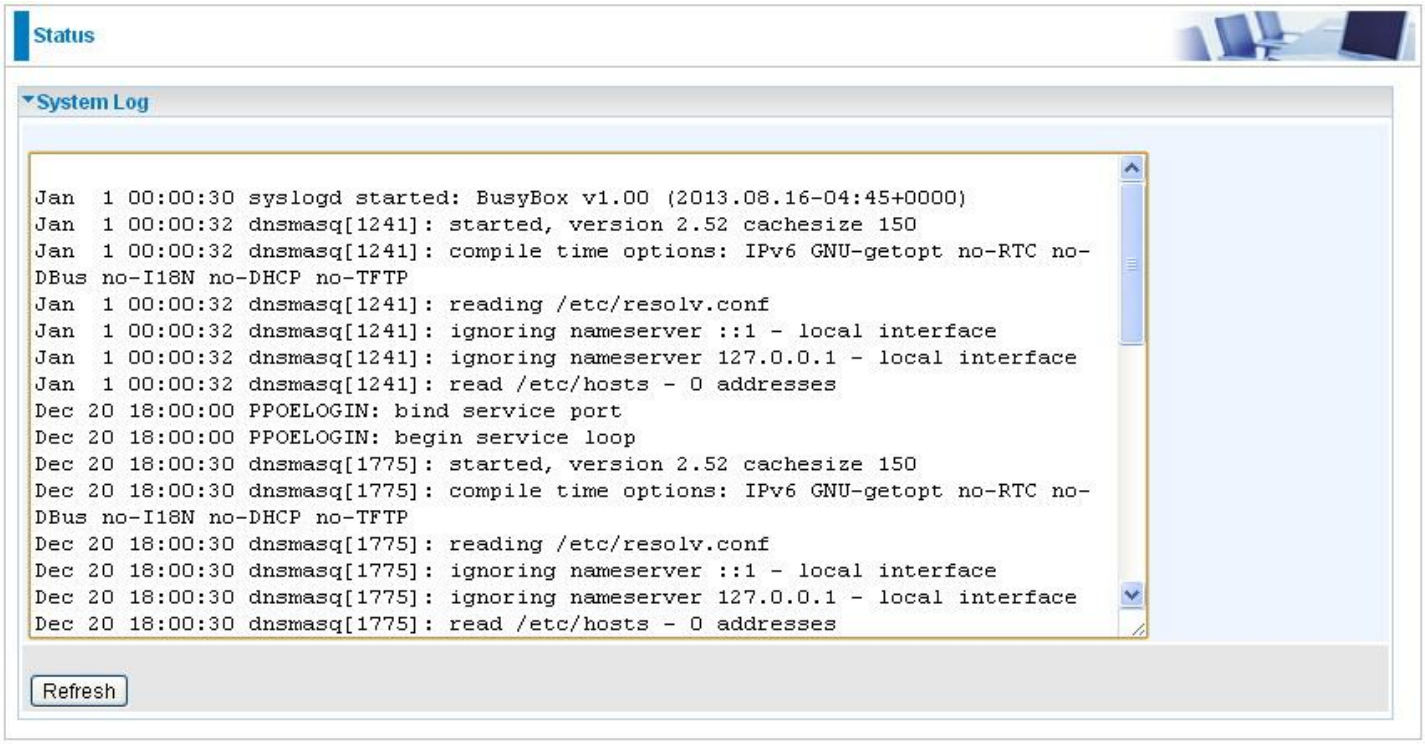
Prefix Length: The prefix length of IPv6 address.

Default Gateway: The IP address of the default gateway.

DNS Server: DNS information.

System Log

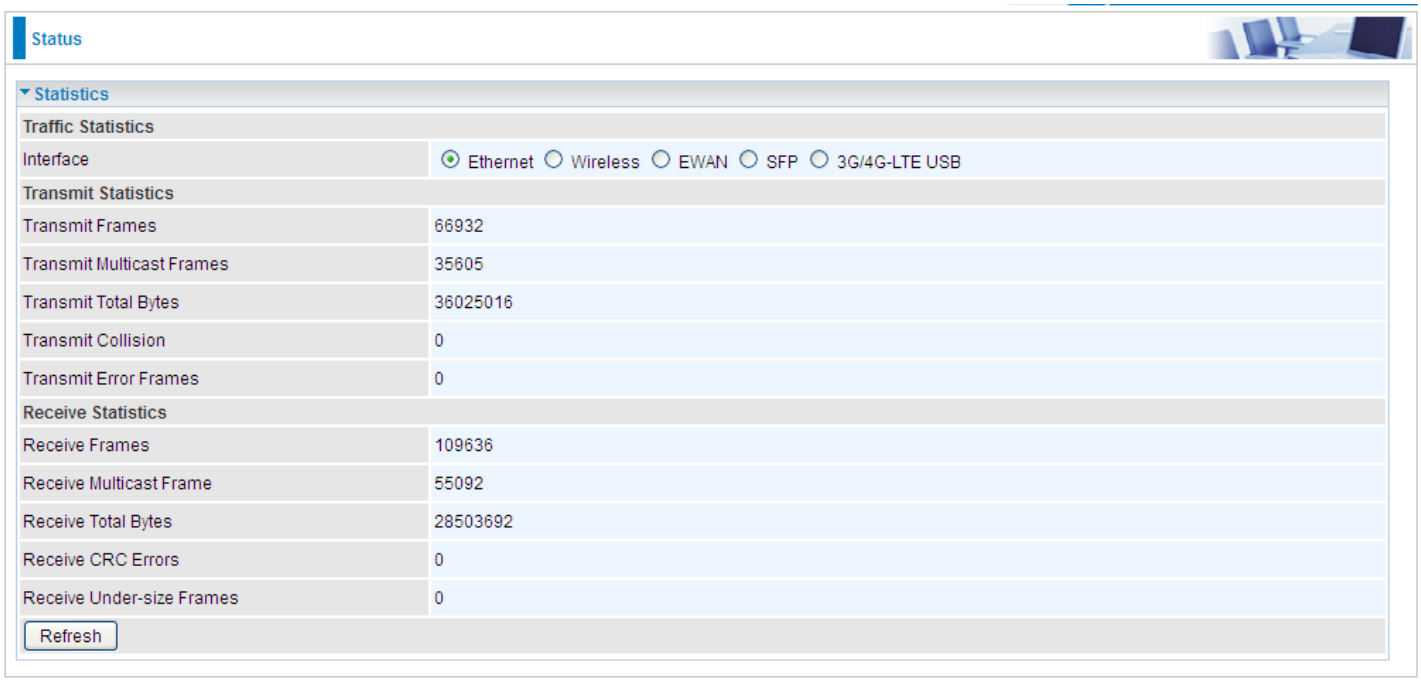
In system log, you can check the operations status and any glitches to the router.


Status
System Log
Jan 1 00:00:30 syslogd started: BusyBox v1.00 (2013.08.16-04:45+0000)
Jan 1 00:00:32 dnsmasq[1241]: started, version 2.52 cachesize 150
Jan 1 00:00:32 dnsmasq[1241]: compile time options: IPv6 GNU-getopt no-RTC no-DBus no-I18N no-DHCP no-TFTP
Jan 1 00:00:32 dnsmasq[1241]: reading /etc/resolv.conf
Jan 1 00:00:32 dnsmasq[1241]: ignoring nameserver ::1 - local interface
Jan 1 00:00:32 dnsmasq[1241]: ignoring nameserver 127.0.0.1 - local interface
Jan 1 00:00:32 dnsmasq[1241]: read /etc/hosts - 0 addresses
Dec 20 18:00:00 PPOELOGIN: bind service port
Dec 20 18:00:00 PPOELOGIN: begin service loop
Dec 20 18:00:30 dnsmasq[1775]: started, version 2.52 cachesize 150
Dec 20 18:00:30 dnsmasq[1775]: compile time options: IPv6 GNU-getopt no-RTC no-DBus no-I18N no-DHCP no-TFTP
Dec 20 18:00:30 dnsmasq[1775]: reading /etc/resolv.conf
Dec 20 18:00:30 dnsmasq[1775]: ignoring nameserver ::1 - local interface
Dec 20 18:00:30 dnsmasq[1775]: ignoring nameserver 127.0.0.1 - local interface
Dec 20 18:00:30 dnsmasq[1775]: read /etc/hosts - 0 addresses
Refresh

Refresh: Press this button to refresh the statistics.

Statistics

❖ Ethernet



Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **Ethernet** port**.**

Transmit Frames: This field displays the number of frames transmitted until the latest second.

Transmit Multicast Frames: This field displays the number of multicast frames transmitted until the latest second.

Transmit Total Bytes: This field displays the number of bytes transmitted until the latest second.

Transmit Collision: This is the number of collisions on this port.

Transmit Error Frames: This field displays the number of error packets on this port.

Receive Frames: This field displays the number of frames received until the latest second.

Receive Multicast Frames: This field displays the number of multicast frames received until the latest second.

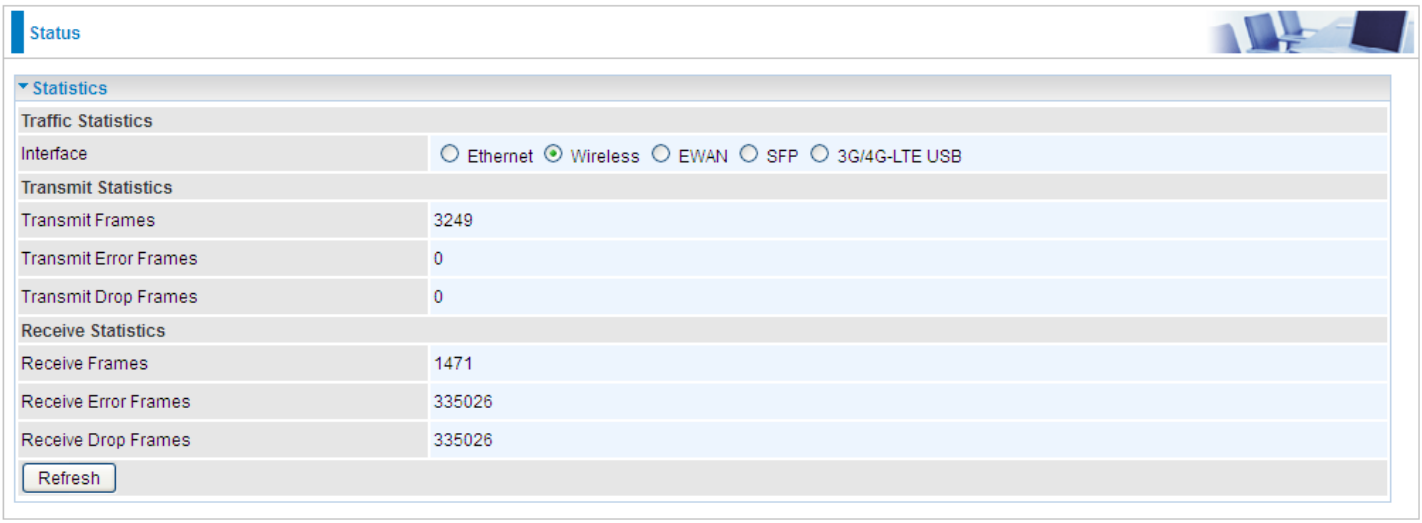
Receive Total Bytes: This field displays the number of bytes received until the latest second.

Receive CRC Errors: This field displays the number of error packets on this port.

Receive Under-size Frames: This field displays the number of under-size frames received until the latest second.

Refresh: Press this button to refresh the statistics.

❖ Wireless



Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **Wireless.**

Transmit Frames: This field displays the number of frames transmitted until the latest second.

Transmit Error Frames: This field displays the number of error frames transmitted until the latest second.

Transmit Drop Frames: This field displays the number of drop frames transmitted until the latest second.

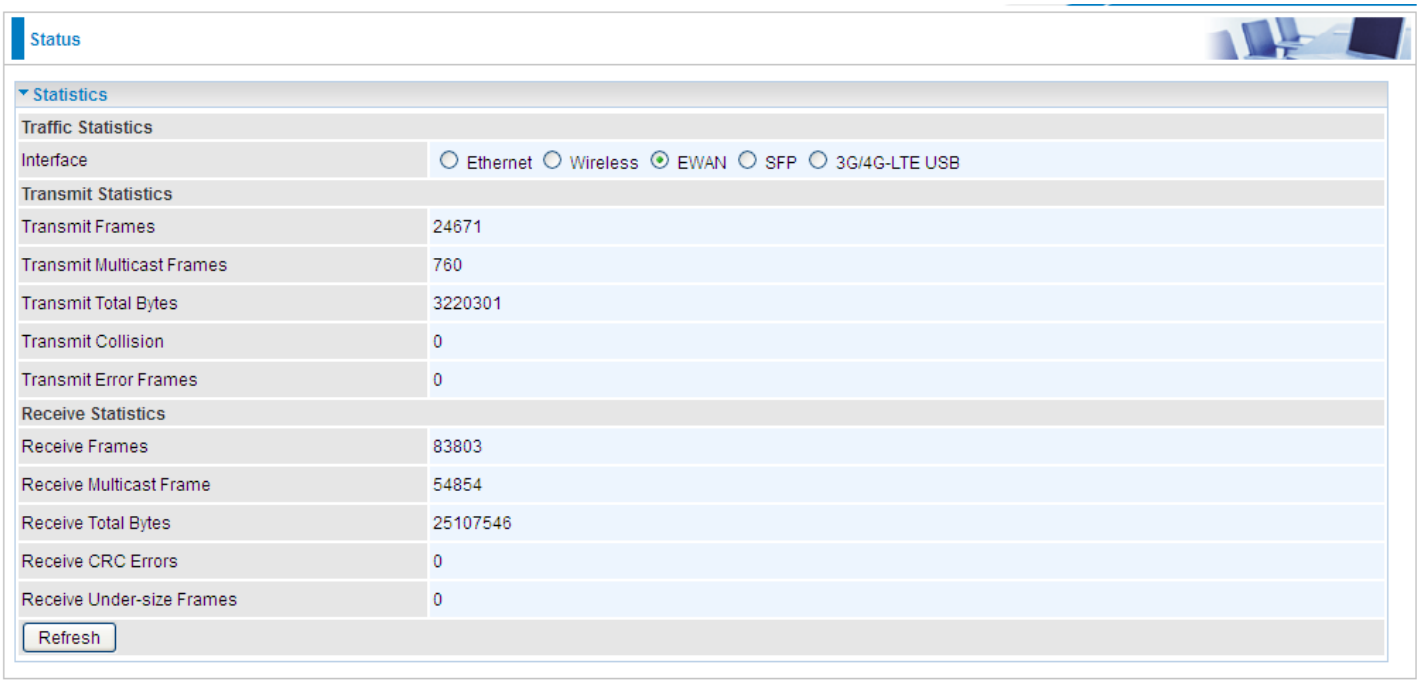
Receive Frames: This field displays the number of frames received until the latest second.

Receive Error Frames: This field displays the number of error frames received until the latest second.

Receive Drop Frames: This field displays the number of drop frames received until the latest second.

Refresh: Press this button to refresh the statistics.

❖ EWAN



Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **EWAN** port**.**

Transmit Frames: This field displays the total number of frames transmitted until the latest second.

Transmit Multicast Frames: This field displays the total number of multicast frames transmitted till the latest second.

Transmit Total Bytes: This field displays the total number of bytes transmitted until the latest second.

Transmit Collision: This is the number of collisions on this port.

Transmit Error Frames: This field displays the number of error packets on this port.

Receive Frames: This field displays the number of frames received until the latest second.

Receive Multicast Frames: This field displays the number of multicast frames received until the latest second.

Receive Total Bytes: This field displays the number of bytes received until the latest second.

Receive CRC Errors: This field displays the number of error packets on this port.

Receive Under-size Frames: This field displays the number of under-size frames received until the latest second.

Refresh: Press this button to refresh the statistics.

SFP

Transmit Frames: This field displays the total number of frames transmitted until the latest second.

Transmit Multicast Frames: This field displays the total number of multicast frames transmitted till the latest second.

Transmit Total Bytes: This field displays the total number of bytes transmitted until the latest second.

Transmit Collision: This is the number of collisions on this port.

Transmit Error Frames: This field displays the number of error packets on this port.

Receive Frames: This field displays the number of frames received until the latest second.

Receive Multicast Frames: This field displays the number of multicast frames received until the latest second.

Receive Total Bytes: This field displays the number of bytes received until the latest second.

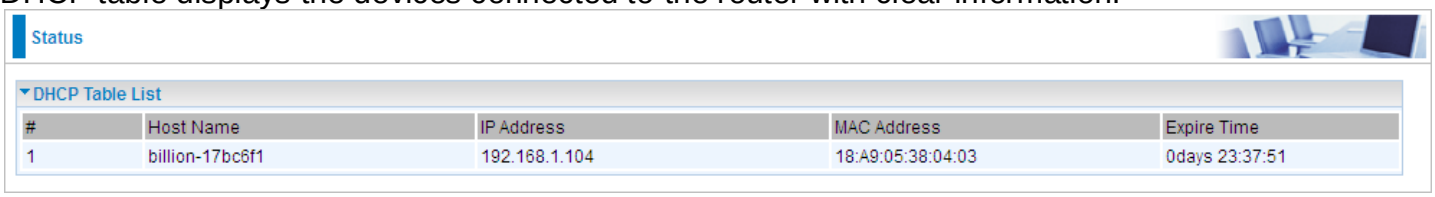
Receive CRC Errors: This field displays the number of error packets on this port.

Receive Under-size Frames: This field displays the number of under-size frames received until the latest second.

Refresh: Press this button to refresh the statistics.

DHCP Table

DHCP table displays the devices connected to the router with clear information.


Status

DHCP Table List

#	Host Name	IP Address	MAC Address	Expire Time
1	billion-17bc6f1	192.168.1.104	18:A9:05:38:04:03	0days 23:37:51

#: The index identifying the connected devices.

Host Name: Show the hostname of the PC.

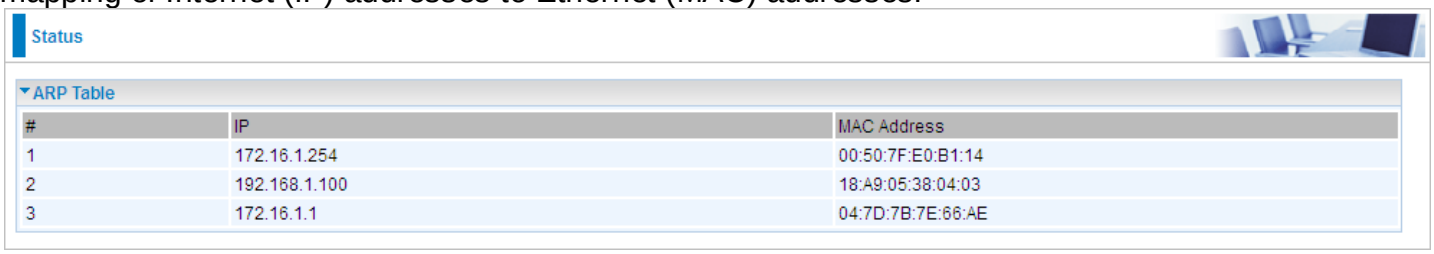
IP Address: The IP allocated to the device.

MAC Address: The MAC of the connected device.

Expire Time: The total remaining interval since the IP assignment to the PC.

ARP Table

This section displays the router's ARP (Address Resolution Protocol) results, which shows the mapping of Internet (IP) addresses to Ethernet (MAC) addresses.


Status

ARP Table

#	IP	MAC Address
1	172.16.1.254	00:50:7F:E0:B1:14
2	192.168.1.100	18:A9:05:38:04:03
3	172.16.1.1	04:7D:7B:7E:66:AE

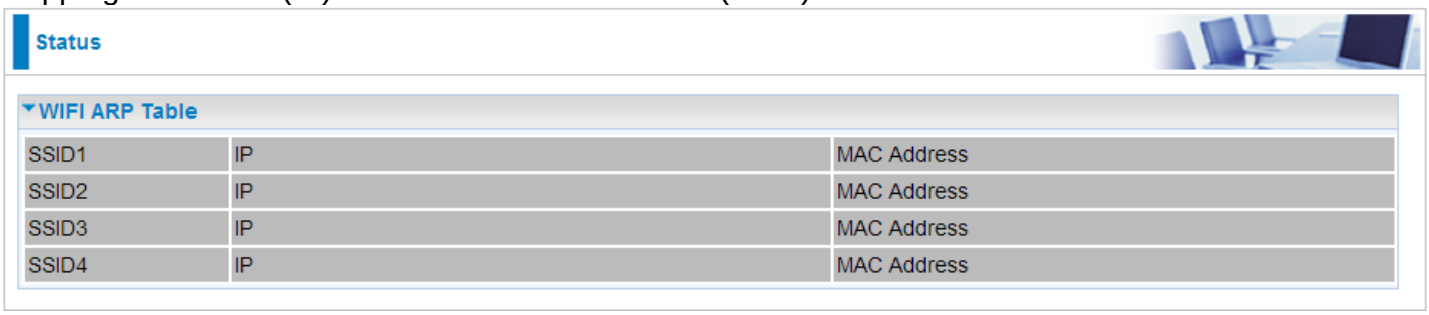
#: The index marking ARP resolution results.

IP Address: Show the IP Address that the MAC address maps to.

MAC Address: Show the MAC address that is corresponded to the IP address it is mapped to.

Wireless ARP Table

This section displays the router's ARP (Address Resolution Protocol) results, which shows the mapping of Internet (IP) addresses to the Wireless (MAC) addresses.


Status

WIFI ARP Table

SSID1	IP	MAC Address
SSID2	IP	MAC Address
SSID3	IP	MAC Address
SSID4	IP	MAC Address

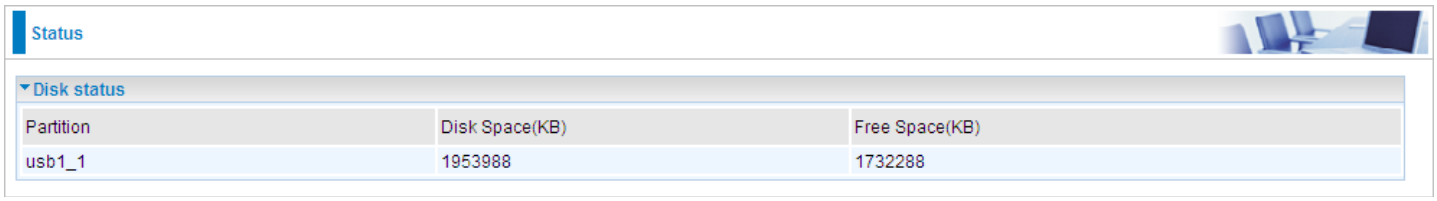
SSID#: List of Wireless Access Point (AP) index.

IP Address: Display current connected / associated IP Address of Wireless client(s).

MAC Address: Display current connected / associated Wireless client's MAC address that is

corresponded to the IP address.

Disk Status



Partition: Display the USB storage partition.

Disk Space (KB): Display the total storage space of the NAS in Kbytes unit.

Free Space (KB): Display the available space in Kbytes unit.

VoIP Status

VoIP status gives you a directive picture on the registered VoIP accounts.

Phone Number: The number you use to register in the Basic page of VoIP.

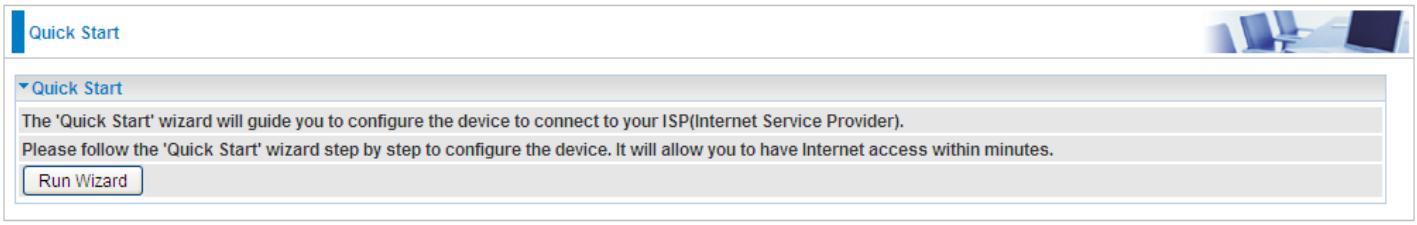
Host: Show the IP address and port number of SIP Registrar.

Status: The status of the registered SIP account.

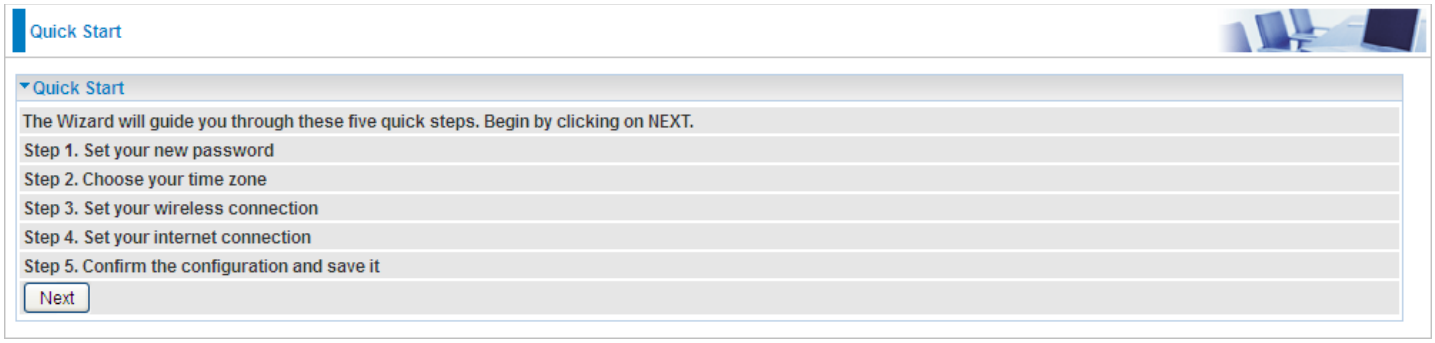
Registered Time: The duration the account has been successfully registered to the SIP registrar.

Quick Start

This is a useful and easy utility to help you to setup the router quickly and to connect to your ISP (Internet Service Provider) with only a few steps. It will guide you step by step to setup time zone and WAN settings of your device. The Quick Start Wizard is a helpful guide for the first-time users to the device.

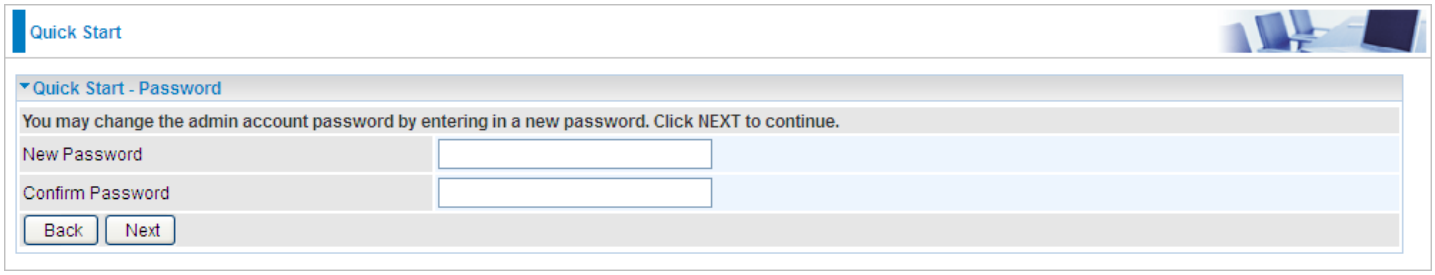

Quick Start
Quick Start
The 'Quick Start' wizard will guide you to configure the device to connect to your ISP(Internet Service Provider).
Please follow the 'Quick Start' wizard step by step to configure the device. It will allow you to have Internet access within minutes.
Run Wizard

For detailed instructions on configuring WAN settings, see refer to the **Interface Setup** section.

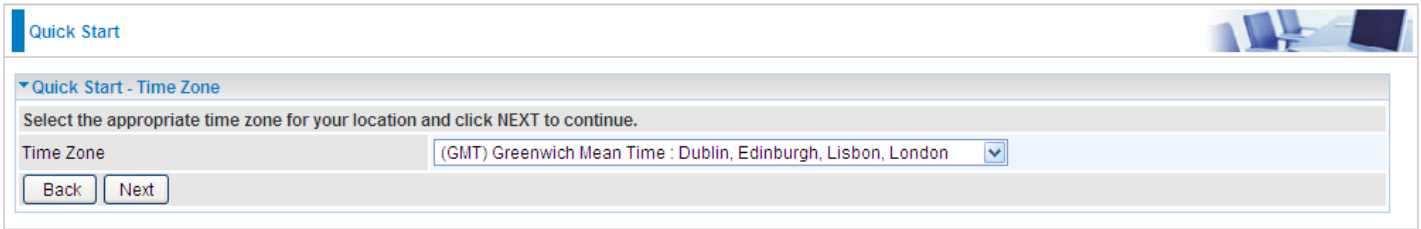

Quick Start
Quick Start
The Wizard will guide you through these five quick steps. Begin by clicking on NEXT.
Step 1. Set your new password
Step 2. Choose your time zone
Step 3. Set your wireless connection
Step 4. Set your internet connection
Step 5. Confirm the configuration and save it
Next

Click **NEXT** to move on to Step 1.

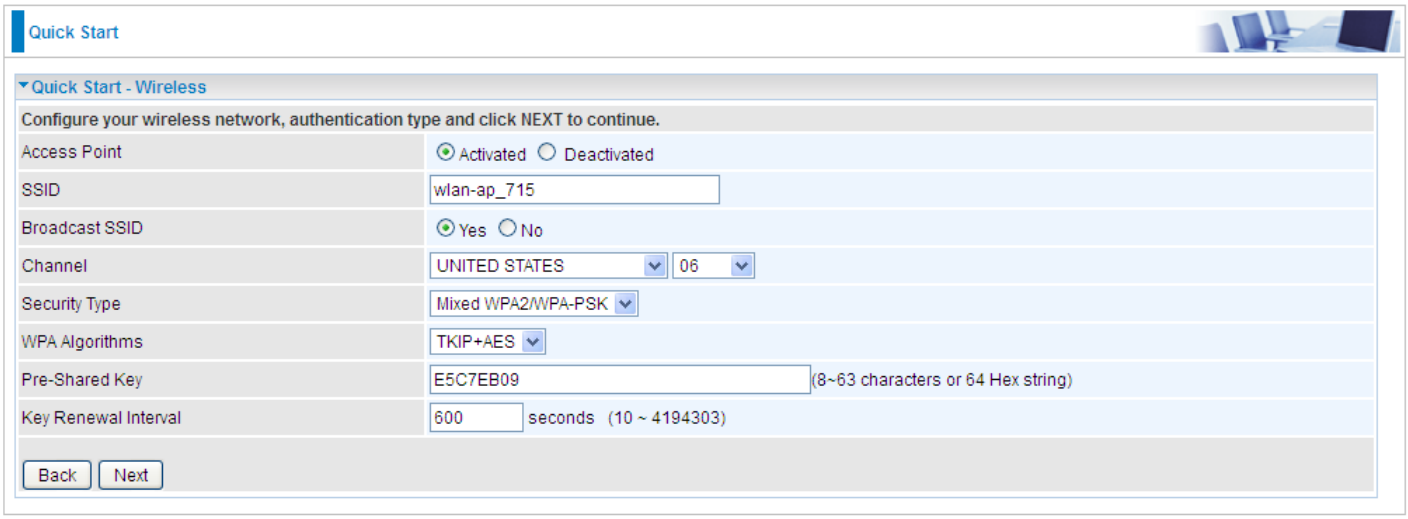
Step1. Set new password of the “admin” account to access for router management. The default is “admin”. Once changed, please use this new password next time when accessing to the router. Click **NEXT** to continue.


Quick Start
Quick Start - Password
You may change the admin account password by entering in a new password. Click NEXT to continue.
New Password
Confirm Password
Back
Next

Step2: Choose your time zone. Click **NEXT** to continue.

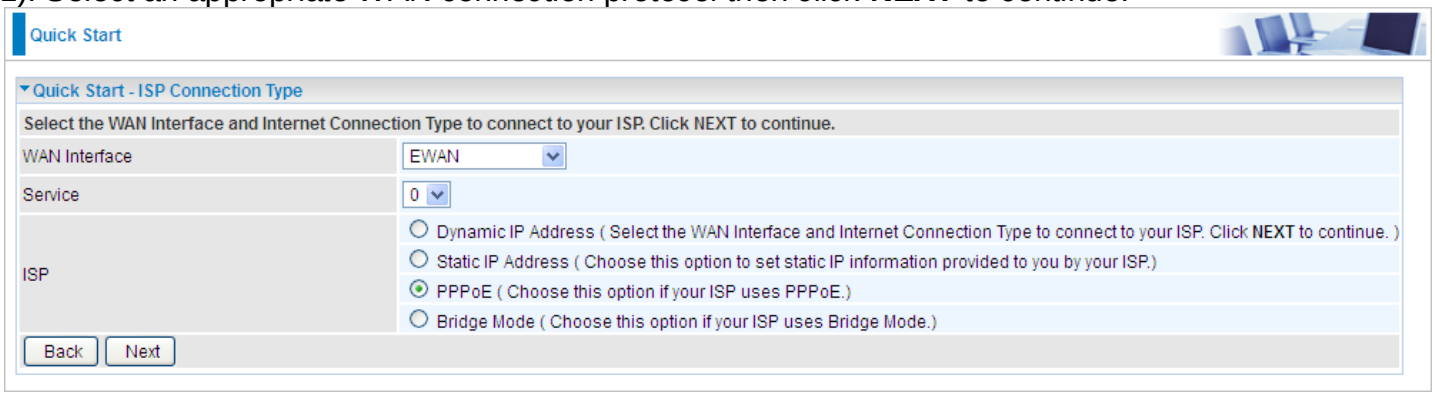

Quick Start
Quick Start - Time Zone
Select the appropriate time zone for your location and click NEXT to continue.
Time Zone
(GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London
Back
Next

Step3: Set up your wireless connection if you want to connect to the Internet wirelessly on your PCs. Click **NEXT** to continue.

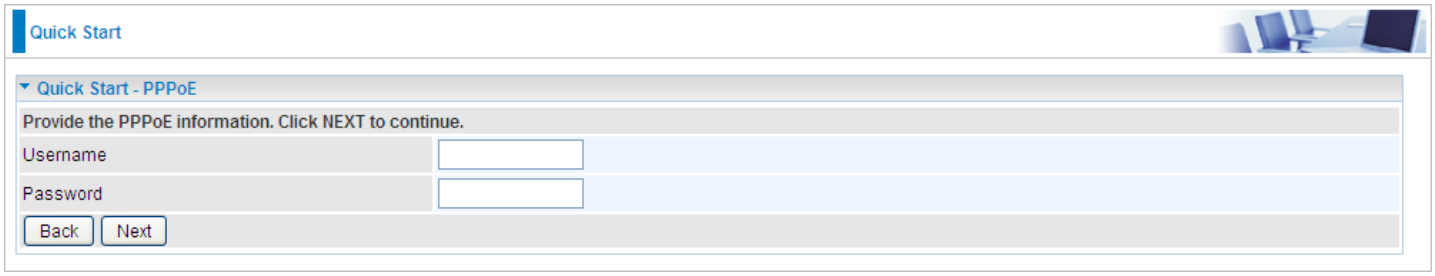


Step4: Set up your Internet connection.

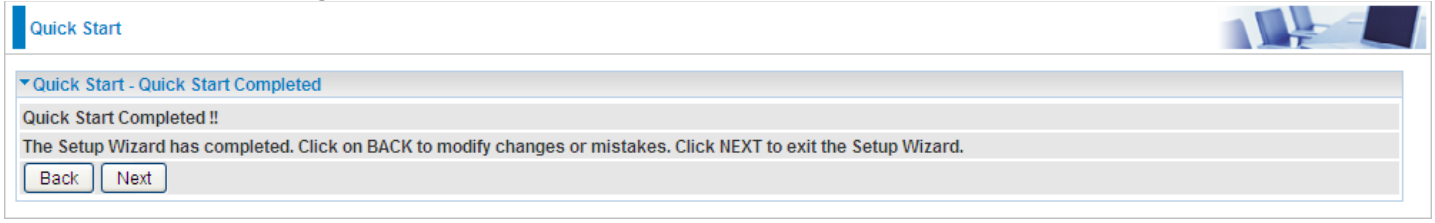
1). Select an appropriate WAN connection protocol then click **NEXT** to continue.


Quick Start
Quick Start - ISP Connection Type
Select the WAN Interface and Internet Connection Type to connect to your ISP. Click NEXT to continue.
WAN Interface
EWAN
Service
0
ISP
Dynamic IP Address (Select the WAN Interface and Internet Connection Type to connect to your ISP. Click NEXT to continue.)
Static IP Address (Choose this option to set static IP information provided to you by your ISP.)
PPPoE (Choose this option if your ISP uses PPPoE.)
Bridge Mode (Choose this option if your ISP uses Bridge Mode.)
Back
Next

2). If selected PPPoE, please enter PPPoE account information provided by your ISP. Click **NEXT** to continue.

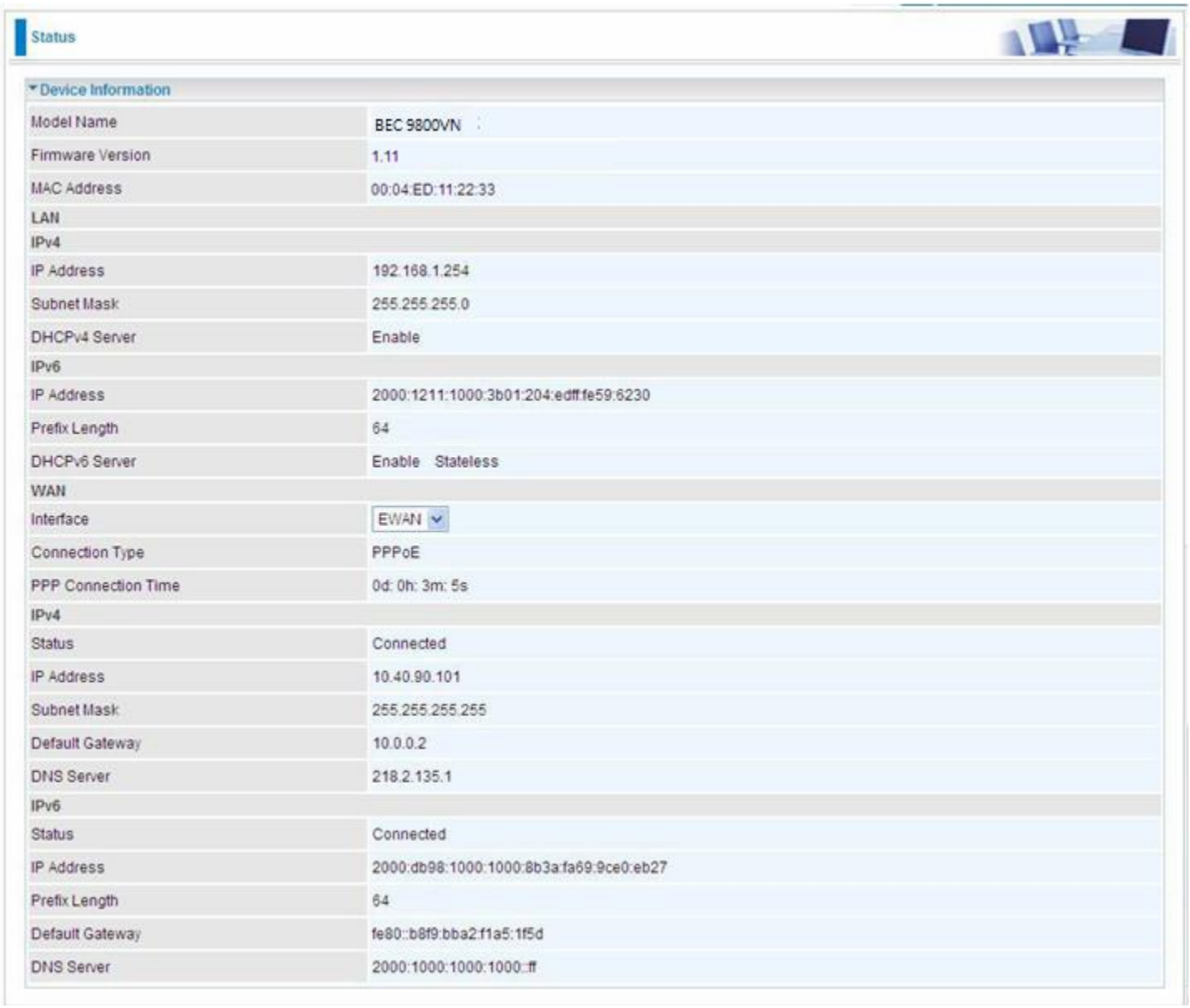


3).The Setup Wizard has completed. Click on BACK to modify changes or mistakes. Click **NEXT** to save the current settings.


Quick Start
Quick Start - Quick Start Completed
Quick Start Completed !!
The Setup Wizard has completed. Click on BACK to modify changes or mistakes. Click NEXT to exit the Setup Wizard.
Back
Next

4). Quick Start Completed!

Switch to **Status > Device Info** to view the status.



Configuration

Click to access and configure the available features in the following: **Interface Setup, Dual WAN, Advanced Setup, VoIP, Access Management,** and **Maintenance.**

These functions are described in the following sections.

Interface Setup

Here are the features under **Interface Setup: Internet**, **LAN**, **Wireless** and **Wireless MAC Filter**.

Internet

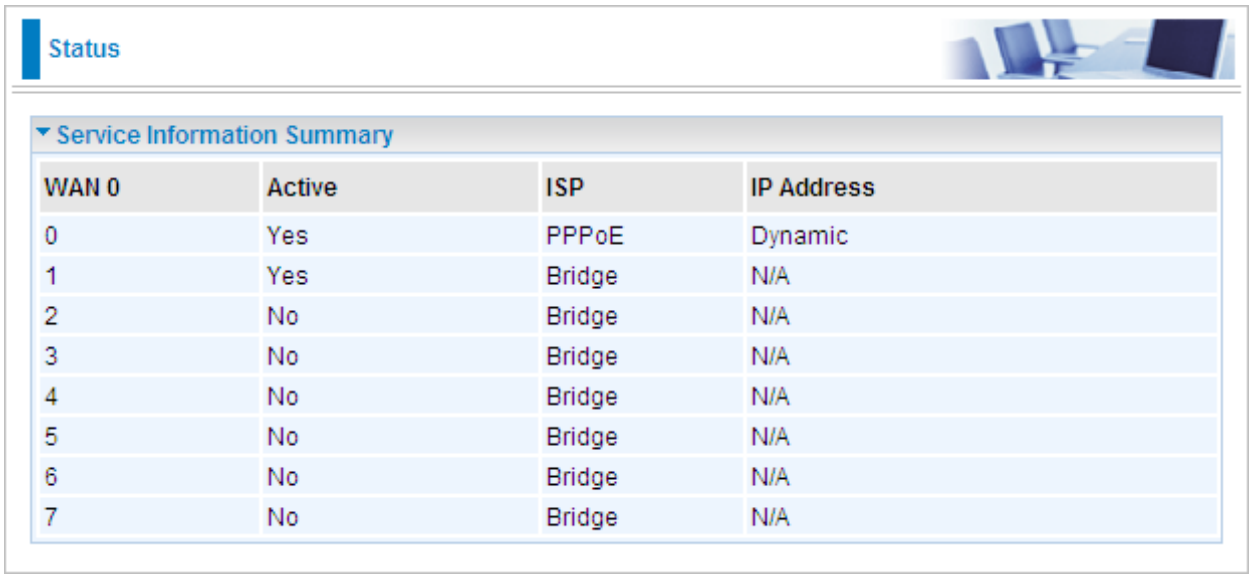
❖ EWAN

Internet	
WAN Interface	EWAN
Multi Service	
Service Index	0 Services Summary
Status	Activated Deactivated
IPv4/IPv6	
IP Version	IPv4 IPv4/IPv6 IPv6
ISP Connection Type	
ISP	Dynamic IP Address Static IP Address PPPoE Bridge Mode
802.1q Options	
802.1q	Activated Deactivated
VLAN ID	4 (range: 4 ~ 4094)
Double Tag	Activated Deactivated
Inner VLAN ID	4 (range: 4 ~ 4094)
PPPoE	
Username	
Password	
Bridge Interface for PPPoE	Activated Deactivated
Connection Setting	
Connection	Always On (Recommended) Connect Manually
TCP MSS Option	TCP MSS 0 bytes(0 means use default)
IP Options	
IP Common Options	
Default Route	Yes No
IPv4 Options	
Get IP Address	Static Dynamic
Static IP Address	0.0.0.0
IP Subnet Mask	0.0.0.0
Gateway	0.0.0.0
Obtain IPv4 DNS	Enable Disable
Primary DNS	
Secondary DNS	
NAT	Enable
Dynamic Route	RIP1 Direction None
TCP MTU Option	TCP MTU 0 bytes(0 means use default:1492)
IGMP Proxy	Enable Disable
IPv6 Options	
IPv6 Address	/
Obtain IPv6 DNS	Enable Disable
Primary DNS	
Secondary DNS	
MLD Proxy	Enable Disable
Save	

Multi Service

Service Index: The index marks the EWAN interface of different ISP type, ranging from 0-7.

Service Summary: The overall service information.



WAN 0	Active	ISP	IP Address
0	Yes	PPPoE	Dynamic
1	Yes	Bridge	N/A
2	No	Bridge	N/A
3	No	Bridge	N/A
4	No	Bridge	N/A
5	No	Bridge	N/A
6	No	Bridge	N/A
7	No	Bridge	N/A

Status: Select to enable or disable the service.

IPv4/IPv6

IP Version: Choose ***IPv4, IPv4/IPv6, IPv6*** based on your environment. If you don't know which one to choose from, please choose IPv4/IPv6 instead.

ISP Connection Type:

ISP: Select the encapsulation type your ISP uses.

- **Dynamic IP:** Select this option if your ISP provides you an IP address automatically.
- **Static IP:** Select this option to set static IP information. You will need to enter in the Connection type, IP address, subnet mask, and gateway address, provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form. IP address from by four IP octets separated by a dot (xx.xx.xx.xx). The Router will not accept the IP address if it is not in this format.
- **PPPoE:** Select this option if your ISP requires you to use a PPPoE connection.
- **Bridge:** Select this mode if you want to use this device as an OSI Layer 2 device like a switch.

802.1q Options

802.1q: When activated, please enter a VLAN ID.

VLAN ID: It is a parameter to specify the VLAN which the frame belongs. Enter the VLAN ID identification, tagged: 4-4095.

Double Tag (Q-in-Q): Enable to activate the Q-in-Q feature.

Inner VLAN ID: Specify the inner/ending VLAN ID of the final packet. Enter the VLAN ID identification, tagged: 4-4095

PPPoE (If selected PPPoE as WAN Connection Type; otherwise, skip this part)

Username: Enter the user name provided by your ISP.

Password: Enter the password provided by your ISP.

Bridge Interface for PPPoE: When “Activated”, the device will gain WAN IP from your ISP with the PPPoE account. But if your PC is connected to the router working as a DHCP client, in this mode, the device acts as a NAT router; while if you dial up with the account within your PC, the device will then work as a bridge forwarding the PPPoE information to the PPPoE server and send the response to your PC, thus your PC gets a WAN IP working in the internet.

Connection Setting

Connection:

- **Always On:** Click on **Always On** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP.
- **Connect Manually:** Select Connect Manually when you don't want the connection up all the time.

TCP MSS Option: Enter the TCP Maximum Segment Size (MSS).

IP Options

Default Route: Select **Yes** to use this interface as default route interface.

IPv4 Options

Get IP Address: Choose Static or Dynamic

Static IP Address: If Static is selected in the above field, please enter the specific IP address you get from ISP and the following IP subnet mask and gateway address.

IP Subnet Mask: The default is 0.0.0.0. User can change it to other such as 255.255.255.0.Type the subnet mask assigned to you by your ISP (if given).

Gateway: Enter the specific gateway IP address you get from ISP.

NAT: Select Enable if you use this router to hold a group of PCs to get access to the internet.

Dynamic Route:

- **RIP Version:** (Routing Information protocol) Select this option to specify the RIP version, including RIP-1, RIP-2.
- **RIP Direction:** Select this option to specify the RIP direction.
  - **None** is for disabling the RIP function.
  - **Both** means the router will periodically send routing information and accept routing information then incorporate into routing table.
  - **IN only** means the router will only accept but will not send RIP packet.
  - **OUT only** means the router will only send but will not accept RIP packet.

TCP MTU Option: Maximum Transmission Unit, the maximum is 1500.

IGMP Proxy: IGMP (Internet Group Multicast Protocol) is a network-layer protocol used to establish membership in a Multicast group. Choose whether enable IGMP proxy.

IPv6 options (only when choose IPv4/IPv6 or just IPv6 in IP version field above):

IPv6 Address: Type the WAN IPv6 address from your ISP.

Obtain IPv6 DNS: Choose if you want to obtain DNS automatically.

Primary/Secondary: if you choose Disable in the Obtain IPv6 DNS field, please type the exactly primary and secondary DNS.

MLD Proxy: MLD (Multicast Listener Discovery Protocol) is to IPv6 just as IGMP to IPv4. It is a Multicast Management protocol for IPv6 multicast packets.

When router's Internet configuration is finished successfully, you can go to status to get the connection information.

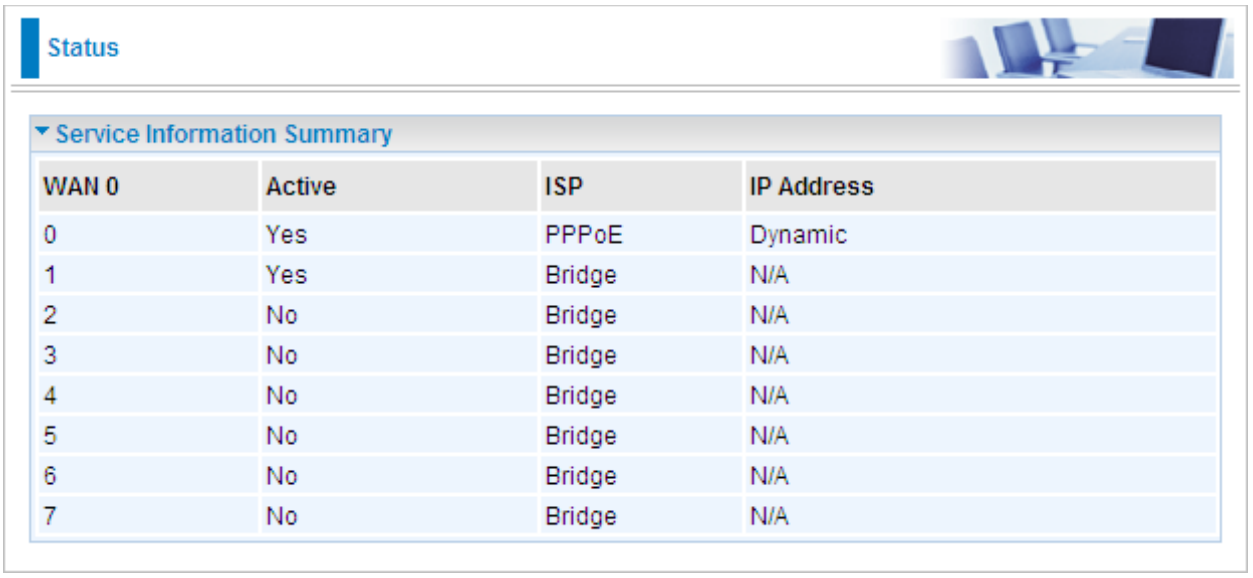
❖ SFP

Internet	
WAN Interface	SFP
Multi Service	
Service Index	0 Services Summary
Status	Activated Deactivated
Link Speed	AUTO 1G 100M
IPv4/IPv6	
IP Version	IPv4 IPv4/IPv6 IPv6
ISP Connection Type	
ISP	Dynamic IP Address Static IP Address PPPoE Bridge Mode
802.1q Options	
802.1q	Activated Deactivated
VLAN ID	4 (range: 4 ~ 4094)
Double Tag	Activated Deactivated
Inner VLAN ID	4 (range: 4 ~ 4094)
PPPoE	
Username	
Password	
Bridge Interface for PPPoE	Activated Deactivated
Connection Setting	
Connection	Always On (Recommended) Connect Manually
TCP MSS Option	TCP MSS 0 bytes(0 means use default)
IP Options	
IP Common Options	
Default Route	Yes No
IPv4 Options	
Get IP Address	Static Dynamic
Static IP Address	0.0.0.0
IP Subnet Mask	0.0.0.0
Gateway	0.0.0.0
Obtain IPv4 DNS	Enable Disable
Primary DNS	
Secondary DNS	
NAT	Enable
Dynamic Route	RIP1 Direction None
TCP MTU Option	TCP MTU 0 bytes(0 means use default:1492)
IGMP Proxy	Enable Disable
IPv6 Options	
IPv6 Address	/
Obtain IPv6 DNS	Enable Disable
Primary DNS	
Secondary DNS	
MLD Proxy	Enable Disable
Save	

Multi Service

Service Index: The index marks the EWAN interface of different ISP type, ranging from 0-7.

Service Summary: The overall service information.



WAN 0	Active	ISP	IP Address
0	Yes	PPPoE	Dynamic
1	Yes	Bridge	N/A
2	No	Bridge	N/A
3	No	Bridge	N/A
4	No	Bridge	N/A
5	No	Bridge	N/A
6	No	Bridge	N/A
7	No	Bridge	N/A

Status: Select to enable or disable the service.

Line Speed: Specify the desire speed (Automatic / 1Gbps /100M) for SFP connectivitive

IPv4/IPv6

IP Version: Choose ***IPv4, IPv4/IPv6, IPv6*** based on your environment. If you don't know which one to choose from, please choose IPv4/IPv6 instead.

ISP Connection Type:

ISP: Select the encapsulation type your ISP uses.

- **Dynamic IP:** Select this option if your ISP provides you an IP address automatically.
- **Static IP:** Select this option to set static IP information. You will need to enter in the Connection type, IP address, subnet mask, and gateway address, provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form. IP address from by four IP octets separated by a dot (xx.xx.xx.xx). The Router will not accept the IP address if it is not in this format.
- **PPPoE:** Select this option if your ISP requires you to use a PPPoE connection.
- **Bridge:** Select this mode if you want to use this device as an OSI Layer 2 device like a switch.

802.1q Options

802.1q: When activated, please enter a VLAN ID.

VLAN ID: It is a parameter to specify the VLAN which the frame belongs. Enter the VLAN ID identification, tagged: 4-4095.

Double Tag (Q-in-Q): Enable to activate the Q-in-Q feature.

Inner VLAN ID: Specify the inner/ending VLAN ID of the final packet. Enter the VLAN ID identification, tagged: 4-4095

PPPoE (If selected PPPoE as WAN Connection Type; otherwise, skip this part)

Username: Enter the user name provided by your ISP.

Password: Enter the password provided by your ISP.

Bridge Interface for PPPoE: When “Activated”, the device will gain WAN IP from your ISP with the PPPoE account. But if your PC is connected to the router working as a DHCP client, in this mode, the device acts as a NAT router; while if you dial up with the account within your PC, the device will then work as a bridge forwarding the PPPoE information to the PPPoE server and send the response to your PC, thus your PC gets a WAN IP working in the internet.

Connection Setting

Connection:

- **Always On:** Click on **Always On** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP.
- **Connect Manually:** Select Connect Manually when you don't want the connection up all the time.

TCP MSS Option: Enter the TCP Maximum Segment Size (MSS).

IP Options

Default Route: Select **Yes** to use this interface as default route interface.

IPv4 Options

Get IP Address: Choose Static or Dynamic

Static IP Address: If Static is selected in the above field, please enter the specific IP address you get from ISP and the following IP subnet mask and gateway address.

IP Subnet Mask: The default is 0.0.0.0. User can change it to other such as 255.255.255.0.Type the subnet mask assigned to you by your ISP (if given).

Gateway: Enter the specific gateway IP address you get from ISP.

NAT: Select Enable if you use this router to hold a group of PCs to get access to the internet.

Dynamic Route:

- **RIP Version:** (Routing Information protocol) Select this option to specify the RIP version, including RIP-1, RIP-2.
- **RIP Direction:** Select this option to specify the RIP direction.
  - **None** is for disabling the RIP function.
  - **Both** means the router will periodically send routing information and accept routing information then incorporate into routing table.
  - **IN only** means the router will only accept but will not send RIP packet.
  - **OUT only** means the router will only send but will not accept RIP packet.

TCP MTU Option: Maximum Transmission Unit, the maximum is 1500.

IGMP Proxy: IGMP (Internet Group Multicast Protocol) is a network-layer protocol used to establish membership in a Multicast group. Choose whether enable IGMP proxy.

IPv6 options (only when choose IPv4/IPv6 or just IPv6 in IP version field above):

IPv6 Address: Type the WAN IPv6 address from your ISP.

Obtain IPv6 DNS: Choose if you want to obtain DNS automatically.

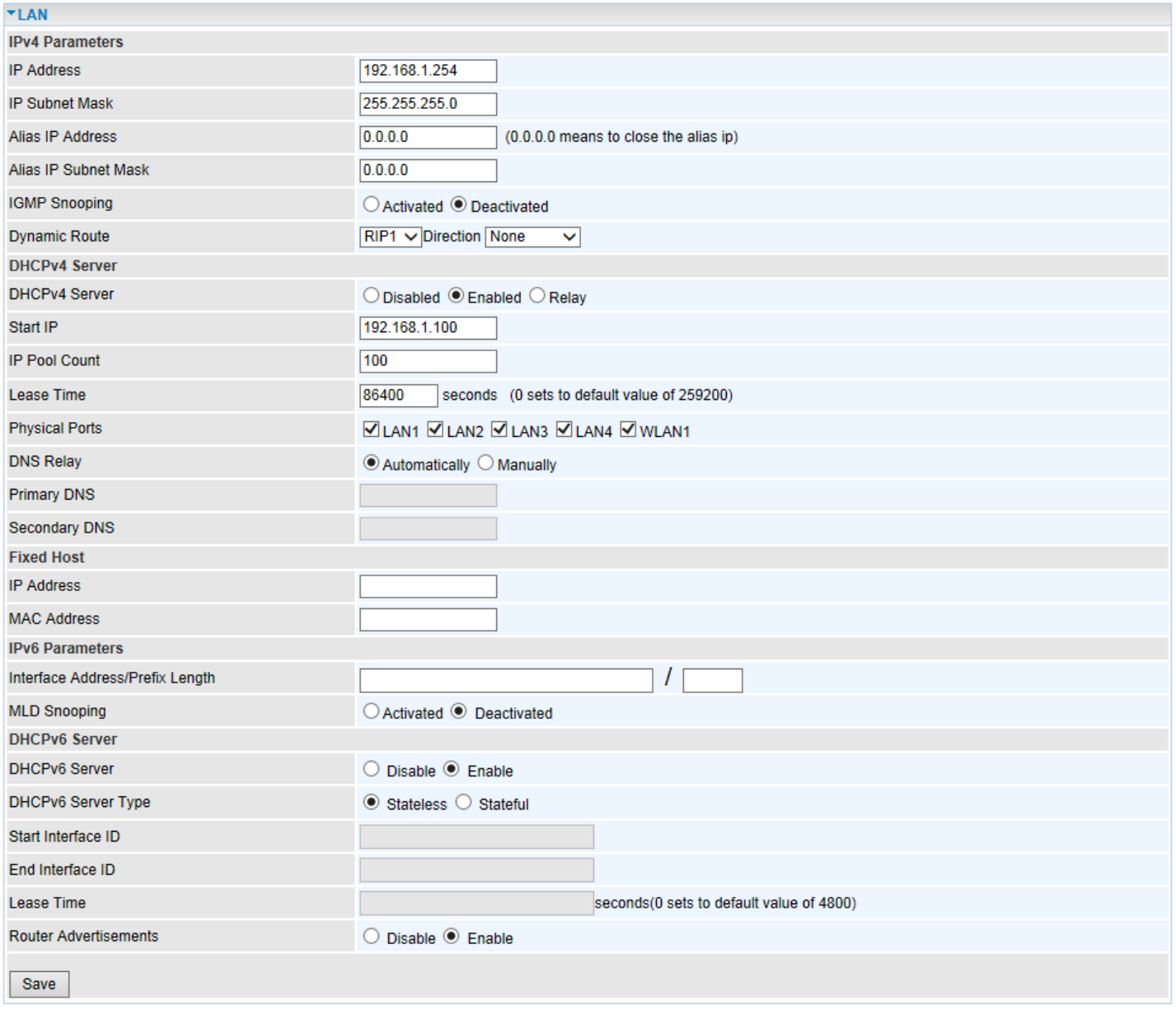
Primary/Secondary: if you choose Disable in the Obtain IPv6 DNS field, please type the exactly primary and secondary DNS.

MLD Proxy: MLD (Multicast Listener Discovery Protocol) is to IPv6 just as IGMP to IPv4. It is a Multicast Management protocol for IPv6 multicast packets.

When router's Internet configuration is finished successfully, you can go to status to get the connection information.

LAN

A Local Area Network (LAN) is a shared communication system to which many computers are attached and is limited to the immediate area, usually the same building or floor of a building.



IPv4 Parameters

IP Address: Enter the IP address of Router in dotted decimal notation, for example, 192.168.1.254 (factory default).

IP Subnet Mask: The default is 255.255.255.0. User can change it to other such as 255.255.255.128.

Alias IP Address: This is for local networks virtual IP interface. Specify an IP address on this virtual interface.

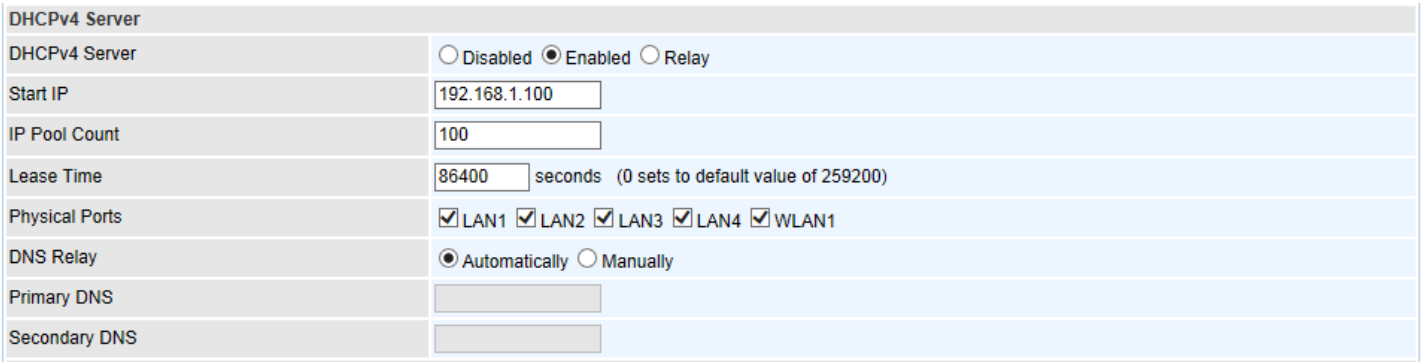
Alias IP Subnet Mask: Specify a subnet mask on this virtual interface.

IGMP Snooping: Select **Activated** to enable IGMP Snooping function, Without IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic - that is, it is forwarded to all ports. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group.

Dynamic Route: Select the RIP version from RIP1 or RIP2.

DHCPv4 Server

DHCP (Dynamic Host Configuration Protocol) allows individual clients to obtain TCP/IP configuration at start-up from a server.



DHCPv4 Server: If set to **Enabled**, your BEC 9800VN can assign IP addresses, default gateway and DNS servers to the DHCP client.

- If set to **Disabled**, the DHCP server will be disabled.
- If set to **Relay**, the BEC 9800VN acts as a surrogate DHCP server and relays DHCP requests and responses between the remote server and the clients. Enter the IP address of the actual, remote DHCP server in the Remote DHCP Server field in this case.
- When DHCP is used, the following items need to be set.

Start IP: This field specifies the first of the contiguous addresses in the IP address pool.

IP Pool Count: This field specifies the count of the IP address pool.

Lease Time: The current lease time of client.

Physical Ports: Select to determine if the DHCPv4 server is applicable to the specific port or ports. By default, all ports can obtain local IP from DHCPv4 server.

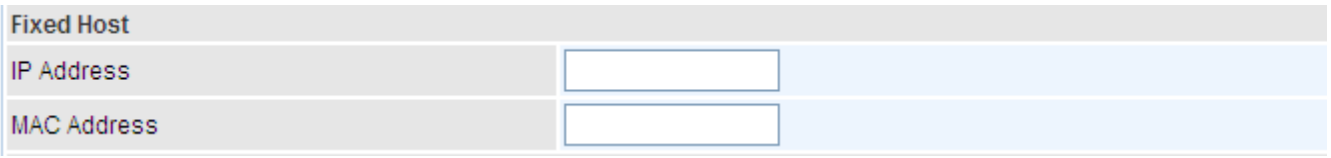
DNS Relay Select Automatically obtained or Manually set (if selected. Please set the exactly information). If you set Static IP in the ISP Connection Type field, then select **Manually** here and set the specific DNS information.

Primary DNS Server: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask.

Secondary DNS Server: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask.

Fixed Host

In this field, users can map the specific IP (must in the DHCP IP pool) for some specific MAC, and this information can be listed in the following table.



IP Address: Enter the specific IP. For example: 192.168.1.110.

MAC Address: Enter the responding MAC. For example: 00:0A:F7:45:6D:ED

When added, you can see the ones listed as showed below:

Fixed Host Litsing			
Index	IP	MAC	Drop
1	192.168.1.102	23:24:5B:4B:22:33	

IPv6 Parameters

The IPv6 address composes of two parts, thus, the prefix and the interface ID.

IPv6 Parameters	
Interface Address/Prefix Length	/
MLD Snooping	Activated Deactivated
DHCPv6 Server	
DHCPv6 Server	Disable Enable
DHCPv6 Server Type	Stateless Stateful
Start Interface ID	
End Interface ID	
Lease Time	seconds(0 sets to default value of 4800)
Router Advertisements	Disable Enable

Interface Address / Prefix Length: Enter a static LAN IPv6 address. If you are not sure what to do with this field, please leave it empty as if contains false information it could result in LAN devices not being able to access other IPv6 device. Router will take the same WAN's prefix to LAN side if the field is empty.

MLD Snooping: Similar to IGMP Snooping, but applicable for IPv6.

DHCPv6 Server

There are two methods to dynamically configure IPv6 address on hosts, **Stateless** and **Stateful**.

Stateless auto-configuration requires no manual configuration of hosts, minimal (if any) configuration of routers, and no additional servers. The stateless mechanism allows a host to generate its own addresses using a combination of locally available information (MAC address) and information (prefix) advertised by routers. Routers advertise prefixes that identify the subnet(s) associated with a link, while hosts generate an "interface identifier" that uniquely identifies an interface on a subnet. An address is formed by combining the two. When using stateless configuration, you needn't configure anything on the client.

Stateful configuration, for example using DHCPv6 (which resembles its counterpart DHCP in IPv4.) In the stateful auto configuration model, hosts obtain interface addresses and/or configuration information and parameters from a DHCPv6 server. The Server maintains a database that keeps track of which addresses have been assigned to which hosts.

DHCPv6 Server: Check whether to enable DHCPv6 server.

DHCPv6 Server Type: Select Stateless or Stateful. When DHCPv6 is enabled, this parameter is available.

- **Stateless:** If selected, the PCs in LAN are configured through RA mode, thus, the PCs in LAN are configured through RA mode, to obtain the prefix message and generate an address using a combination of locally available information (MAC address) and information (prefix) advertised by routers, but they can obtain such information like DNS from DHCPv6 Server.
- **Stateful:** If selected, the PCs in LAN will be configured like in IPv4 mode, thus obtain addresses

and DNS information from DHCPv6 server.

Start interface ID: enter the start interface ID. The IPv6 address composed of two parts, thus, the prefix and the interface ID. Interface is like the Host ID compared to IPv4.

End interface ID: enter the end interface ID.

Leased Time (hour): the leased time, similar to leased time in DHCPv4, is a time limit assigned to clients, when expires, the assigned ID will be recycled and reassigned.

Issue Router Advertisement: Check to Enable or Disable the Issue Router Advertisement feature. This feature is to send Router Advertisement messages periodically which would multicast the IPv6 Prefix information (similar to v4 network number 192.168.1.0) to all LAN devices if the field is enabled. We suggest enabling this field.

Wireless

This section introduces the wireless LAN and some basic configurations. Wireless LANs can be as complex as a number of computers with wireless LAN cards communicating through access points which bridge network traffic to the wired LAN.

Configuration

Wireless

Access Point Settings	
Access Point	Activated / Deactivated
AP MAC Address	00:04:ED:15:07:00
Wireless Mode	802.11b+g+n
Channel	UNITED STATES, 06, Current Channel : 6
Beacon Interval	100 (range: 20~1000)
RTS/CTS Threshold	2347 (range: 1500~2347)
Fragmentation Threshold	2346 (range: 256~2346, even numbers only)
DTIM Interval	1 (range: 1~255)
TX Power	100 (range:1~100)
IGMP Snooping	Yes / No
11n Settings	
Channel Bandwidth	40 MHz
Guard Interval	Auto
MCS	Auto
SSID Settings	
Available SSID	1
SSID Index	SSID1
SSID	wlan-ap_715
Broadcast SSID	Yes / No
SSID Activated	Always
WPS Settings	
Use WPS	Yes / No
WPS State	Configured
WPS Mode	PIN code / PBC
Security Settings	
Security Type	Mixed WPA2/WPA-PSK
WPA Algorithms	TKIP+AES
Pre-Shared Key	E5C7EB09 (8~63 characters or 64 Hex string)
Key Renewal Interval	600 seconds (10 ~ 4194303)
WDS Settings	
AP MAC Address	00:04:ED:15:07:00
WDS Mode	Activated / Deactivated
WDS Peer MAC #1	00:00:00:00:00:00
WDS Peer MAC #2	00:00:00:00:00:00
WDS Peer MAC #3	00:00:00:00:00:00
WDS Peer MAC #4	00:00:00:00:00:00

Save

Access Point Settings

Access Point: Default setting is set to **Activated**. If you want to close the wireless interface, select **Deactivated.**

AP MAC Address: The MAC address of wireless AP.

Wireless Mode: The default setting is **802.11b+g+n** (Mixed mode). If you do not know or have both 11g and 11b devices in your network, then keep the default in **mixed mode**. From the drop-down manual, you can select **802.11g** if you have only 11g card. If you have only 11b card, then select **802.11b** and if you only have 802.11n then select **802.11n**.

Channel: The range of radio frequencies used by IEEE 802.11b/g/n wireless devices is called a channel. There are Regulation Domains and Channel ID in this field. The Channel ID will be different based on Regulation Domains. Select a channel from the drop-down list box.

Beacon interval: The Beacon Interval value indicates the frequency interval of the beacon. Enter a value between 20 and 1000. A beacon is a packet broadcast by the Router to synchronize the wireless network.

RTS/CTS Threshold: The RTS (Request To Send) threshold (number of bytes) for enabling RTS/CTS handshake. Data with its frame size larger than this value will perform the RTS/CTS handshake. Enter a value between 1500 and 2347.

Fragmentation Threshold: The threshold (number of bytes) for the fragmentation boundary for directed messages. It is the maximum data fragment size that can be sent. Enter a value between 256 and 2346, even number only.

DTIM Interval: This value, between 1 and 255, indicates the interval of the Delivery Traffic Indication Message (DTIM).

TX Power: The transmission power of the antennas, ranging from 1-100, the higher the more powerful of the transmission performance.

IGMP Snooping: Enable or disable the IGMP Snooping function for wireless. Without IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic - that is, it is forwarded to all ports. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group."

11n Settings

Channel Bandwidth: Select either **20 MHz** or **20/40 MHz** for the channel bandwidth. The wider the Channel bandwidth the better the performance will be.

Guard Interval: Select either **400nsec** or **800nsec** for the guard interval. The guard interval is here to ensure that data transmission do not interfere with each other. It also prevents propagation delays, echoing and reflections. The shorter the Guard Interval, the better the performance will be. We recommend users to select Auto.

MCS: There are options **0~15** and **AUTO** to select for the **Modulation and Coding Scheme**. We recommend users selecting **AUTO**.

SSID Settings

Available SSID: User can determine how many virtual SSIDs to be used. Default is 1, maximum is 4.

SSID Index: Select the number of SSIDs you want to use; up to 4 SSIDs are available in the list.

SSID: The SSID is the unique name of a wireless access point (AP) to be distinguished from another.

For security propose, change the default **wlan-ap** to a unique ID name to the AP which is already built-in to the router's wireless interface. Make sure your wireless clients have exactly the SSID as the device, in order to get connected to your network.

Broadcast SSID: Select **Yes** to make the SSID visible so a station can obtain the SSID through passive scanning. Select **No** to hide the SSID in so a station cannot obtain the SSID through passive scanning.

SSID Activated: Select the time period during which the SSID is active. Default is always which means the SSID will be active all the time without time control. See Time Schedule to set the timeslot to flexibly control when the SSID functions.

WPS Settings

WPS (Wi-Fi Protected Setup) feature is a standard protocol created by Wi-Fi Alliance. This feature greatly simplifies the steps needed to create a Wi-Fi network for a residential or an office setting. WPS supports 2 types of configuration methods which are commonly known among consumers: **PIN Method** & **PBC Method**.

WPS State: Display whether the WPS is **configured** or **unconfigured**.

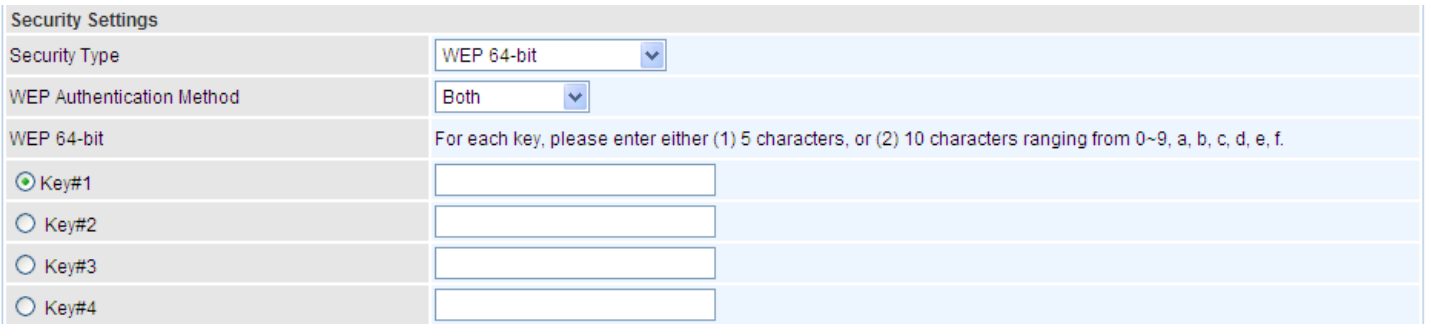
WPS Mode: Select the mode which to start WPS, choose between **PIN Code** and **PBC** (Push Button). Selecting **Pin Code** mode will require you to know the enrollee PIN code.

To future understand the two modes of configuration; please refer to the example of the **Wi-Fi Protected Setup.**

Security Settings

Security Type: You can disable or enable wireless security for protecting wireless network. The default type of wireless security is OPEN and to allow all wireless stations to communicate with the access points without any data encryption.
To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP and WPA.
There are five alternatives to select from: WEP 64-bit, WEP 128-bit, WPA-PSK, WPA2-PSK, and Mixed WPA/WPA2-PSK. If you require high security for transmissions, please select WPA-PSK, WPA2-PSK or WPA/WPA2-PSK.

WEP



WEP Authentication Method: WEP authentication method, there are two methods of authentication used, Open System authentication (OPENWEB) and Share Key authentication (SHAREDWEB). We suggest you select OPENWEB.

Key 1 to Key 4: Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four

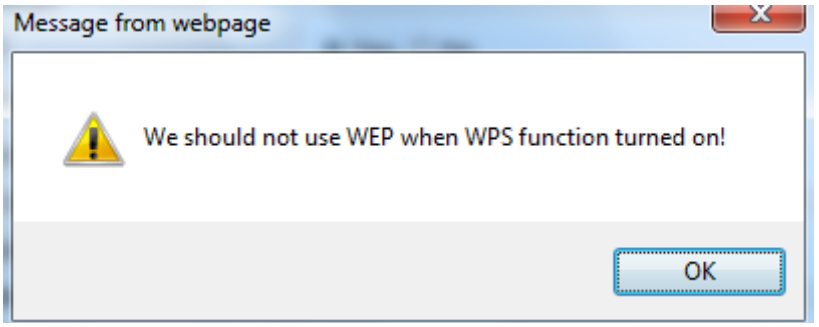
keys for your selection. The input format is in HEX style, 5 and 13 HEX codes are required for 64-bitWEP and 128-bitWEP respectively.

If you chose **WEP 64-bit**, then enter any 5 ASCII characters or 10 hexadecimal characters ("0-9", "A-F").

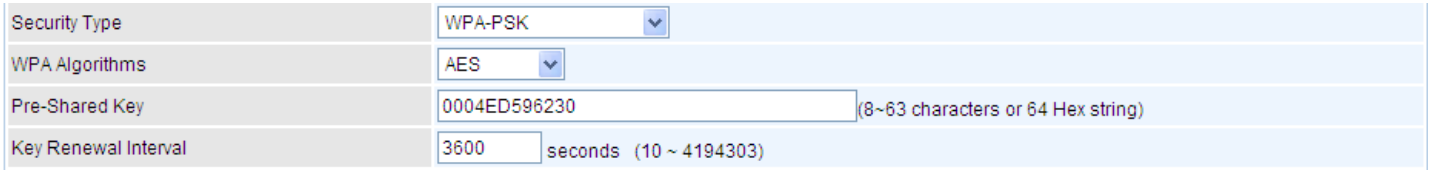
If you chose **WEP 128-bit**, then enter 13 ASCII characters or 26 hexadecimal characters ("0-9", "A-F").

You must configure all four keys, but only one key can be activated at any one time. The default key is key 1.

Note: When you enable **WPS** function, this **WEP** function will be invalid. And if you select one of **WEP-64Bits/ WEP-128Bits,** the following prompt box will appear to notice you.



- **WPA-PSK & WPA2-PSK**



WPA Algorithms: TKIP (Temporal Key Integrity Protocol) or AES (Advanced Encryption System) utilizes a stronger encryption method and incorporates Message Integrity Code (MIC) to provide protection against hackers.

Pre-Shared key: The key for network authentication. The input format should be 8-63 ASKII characters or 64 hexadecimal characters

Key Renewal Interval: The time interval for changing the security key automatically between wireless client and AP.

WDS Settings

WDS (Wireless distributed system) is a wireless access point mode that enables wireless link and communication with other access point. It is easy to be installed, just define the peer's MAC of the connected AP.

WDS Mode: select Activated to enable WDS feature and Deactivated to disable this feature.

MAC Address: Enter the AP MAC addresses (in XX:XX:XX:XX:XX:XX format) of the peer connected AP.

WDS Settings	
WDS Mode	(•) Activated ( ) Deactivated
WDS Peer MAC #1	00:00:00:00:00:00
WDS Peer MAC #2	00:00:00:00:00:00
WDS Peer MAC #3	00:00:00:00:00:00
WDS Peer MAC #4	00:00:00:00:00:00

Wi-Fi Protected Setup (WPS) Example I:

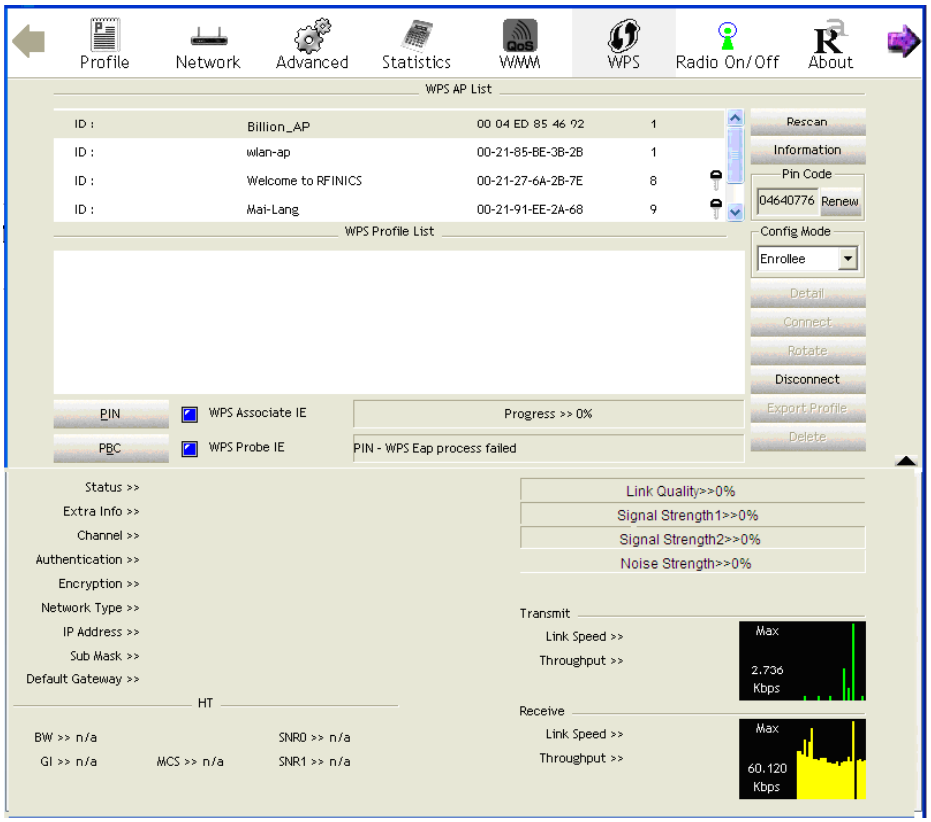
PIN Method: Configure AP as Registrar

1. Jot down the client's Pin (e.g. 04640776).

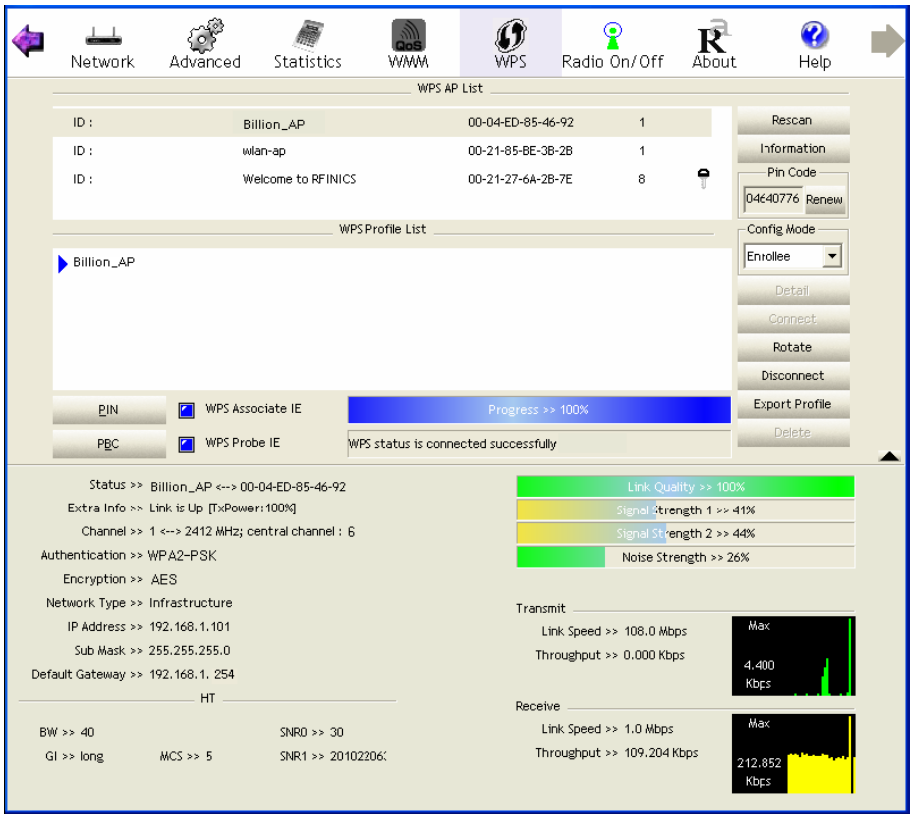
SSID Settings	
SSID Num	1
SSID Index	SSID1
SSID	Billion_AP
Broadcast SSID	Yes No
SSID Activated	Always
WPS Settings	
Use WPS	Yes No
WPS State	Configured
WPS Mode	PIN code PBC
AP PIN Code	03454435 Generate
Enrollee PIN Code	04640776
WPS Progress	In progress Stop WPS
Security Settings	
Security Type	Mixed WPA2/WPA-PSK
WPA Algorithms	AES
Pre-Shared Key	12345678 (8~63 characters or 64 Hex string)
Key Renewal Interval	3600 seconds (10 ~ 4194303)

2. Enter the Enrollee (Client) PIN code and then press Start WPS.

3. Launch the wireless client's WPS utility (e.g. Ralink Utility). Set the Config Mode as Enrollee, press the WPS button on the top bar, select the AP (e.g. Billion_AP) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.



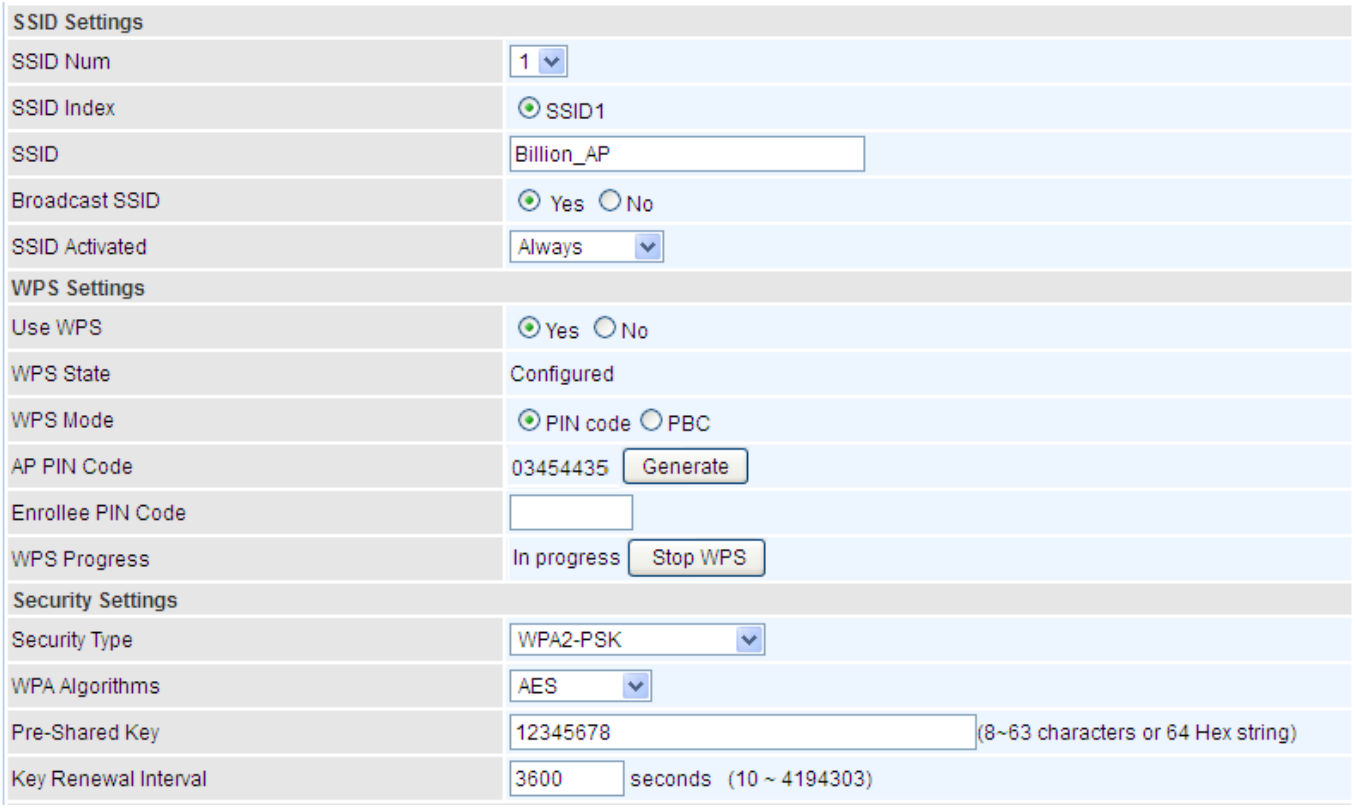
4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar (router).



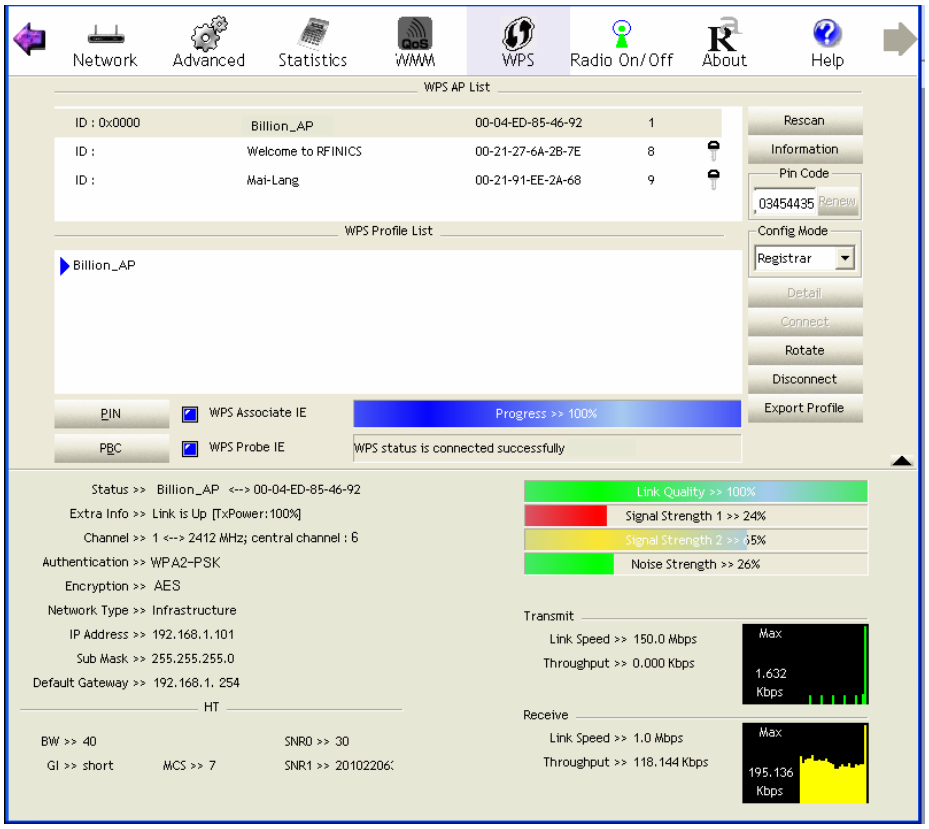
Wi-Fi Protected Setup (WPS) Example II:

PIN Method: Configure AP as Enrollee

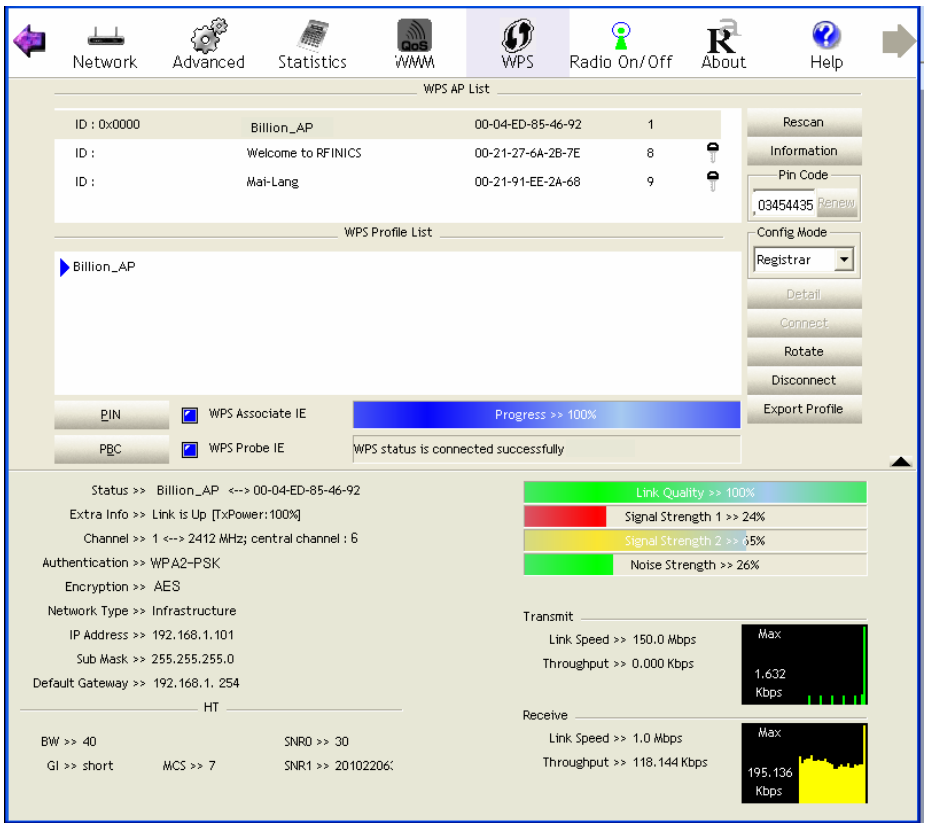
1. Jot down the WPS PIN (e.g. 03454435). Press Start WPS.



2. Launch the wireless client's WPS utility (e.g. Ralink Utility). Set the Config Mode as Registrar. Enter the PIN number in the PIN Code column then choose the correct AP (e.g. Billion_AP) from the WPS AP List before pressing the PIN button to run the scan.



3. The router's (AP's) SSID and security setting will now be configured to match the SSID and security setting of the registrar (client).



4. Now to make sure that the setup is correctly done, cross check to see if the SSID and the security setting of the registrar setting match with the parameters found on both Wireless Configuration and Wireless Security Configuration page.

Wi-Fi Protected Setup (WPS) Example III:

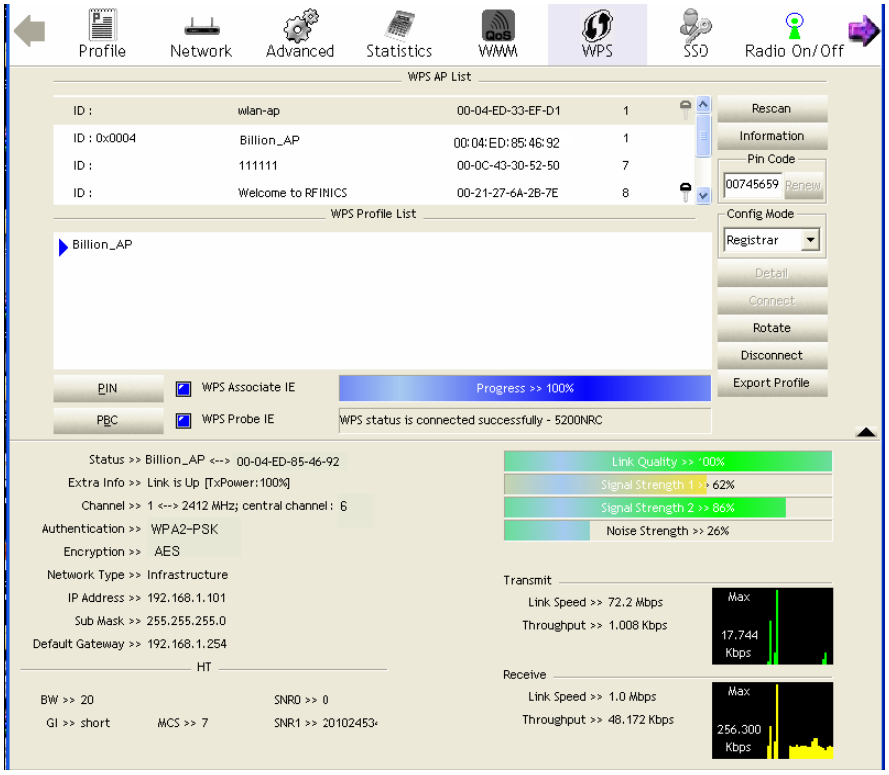
PBC Method:

1. Press the PBC radio button, Then Start WPS.

SSID Settings	
SSID Num	1
SSID Index	SSID1
SSID	Billion_AP
Broadcast SSID	Yes No
SSID Activated	Always
WPS Settings	
Use WPS	Yes No
WPS State	Configured
WPS Mode	PIN code PBC
Security Settings	
Security Type	WPA2-PSK
WPA Algorithms	AES
Pre-Shared Key	12345678 (8~63 characters or 64 Hex string)
Key Renewal Interval	3600 seconds (10 ~ 4194303)

2. Launch the wireless client's WPS Utility (e.g. Ralink Utility). Set the Config Mode as Enrollee. Then press the WPS button and choose the correct AP (e.g. Billion_AP) from the WPS AP List section before pressing the PBC button to run the scan.

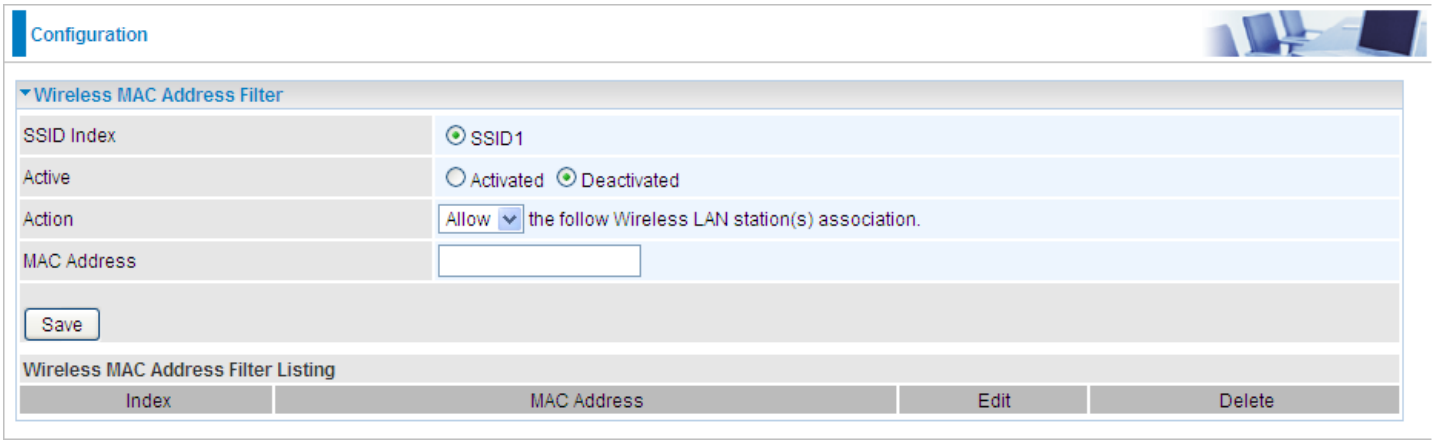
3. When the PBC button is pushed, a wireless communication will be established between your router and the PC. The client's SSID and security setting will now be configured to match the SSID and security setting of the router.



Wireless MAC Filter

The MAC filter screen allows you to configure the router to give exclusive access to up to 8 devices (Allow Association) or exclude up to 8 devices from accessing the router (Deny Association). Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:AA:BB:00:00:02.

You need to know the MAC address of the devices you wish to filter.



SSID Index: Select the targeted SSID you want the MAC filter rules to apply to.

Active: Select **Activated** to enable MAC address filtering.

Action: Define the filter action for the list of MAC addresses in the MAC address filter table.

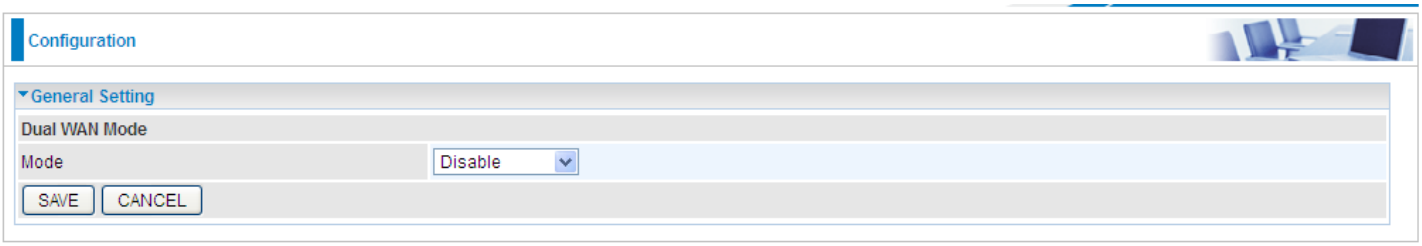
Select **Deny** to block access to the AP, MAC addresses not listed will be allowed to access the router. Select **Allow** to permit access to the router, MAC addresses not listed will be denied access to the router.

MAC Address: Enter the MAC addresses (in XX:XX:XX:XX:XX:XX format) of the wireless station that are allowed or denied access to the specified in these address fields.

Dual WAN

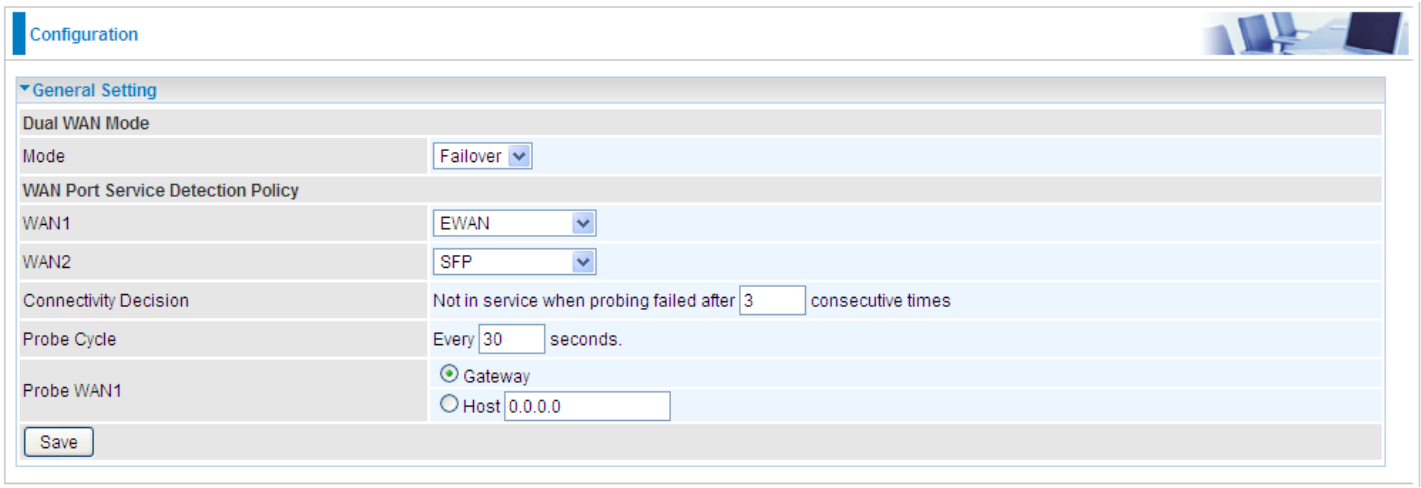
Dual WAN is specially designed to offer users Failover/Fallback or Load Balance feature.

Auto Failover/Failback is to ensure an always-on internet connection. Users can set a WAN1 (main WAN) and WAN 2 (backup WAN), and when WAN1 fails, it will switch to WAN2, and when WAN1 restores, it will switch to WAN1 again.



Select **Failover** to enable the failover/failback feature or **Load Balance** to make the router work in load balance mode.

❖ Failover



WAN Port Service Detection Policy

WAN1: Select “EWAN” or “SFP” for WAN1 (The main WAN).

WAN2: Select“SFP” for WAN2 as backup port if you select “EWAN” as WAN1.

Connectivity Decision: Set how many times of probing failure to switch to backup port.

Probe Cycle: Set the time duration for the **Probe Cycle** to determine when the router will switch to the backup connection (backup port) once the main connection (main port) fails. For example, when set to 30 seconds, the probe will be conducted every 30 seconds.

Note:

1) The time set is for each probe cycle, but the decision to change to the backup port is determined by **Probe Cycle** multiplied by **connection Decision amount** (e.g. From the image above it will be 30 seconds multiplied by 3 consecutive fails, the router will determine failover to WAN2 (backup port)).

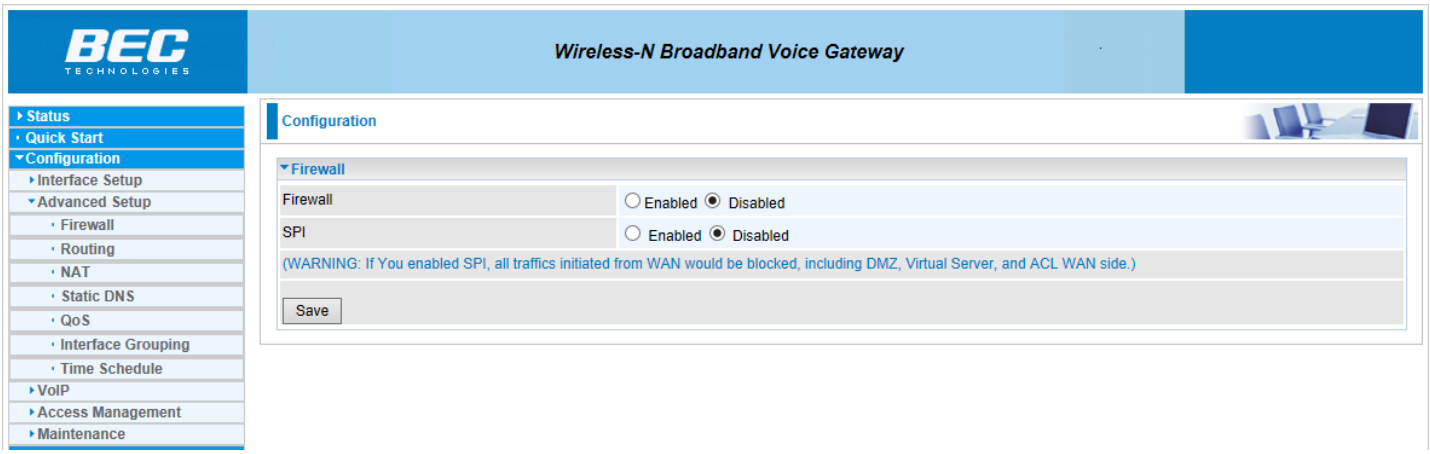
2).The failback setting follow the same decision policy as the failover. For example, according to settings above in the screenshot, the connection probe will be carried out every 30 seconds, and 3 consecutive times of probe success is found, the router will determine failback to WAN1 (main WAN).

Probe WAN 1: Choose the probe policy, to probe gateway or host (users decide themselves)

- **Gateway:** It will send ping packets to gateway of Wan1 interface and wait for response from it in every “Probe Cycle” to check the connectivity of the gateway of WAN1 interface.
- **Host:** It will send ping packets to specific host and wait for response in every “Probe Cycle”. The host must be an IP address.

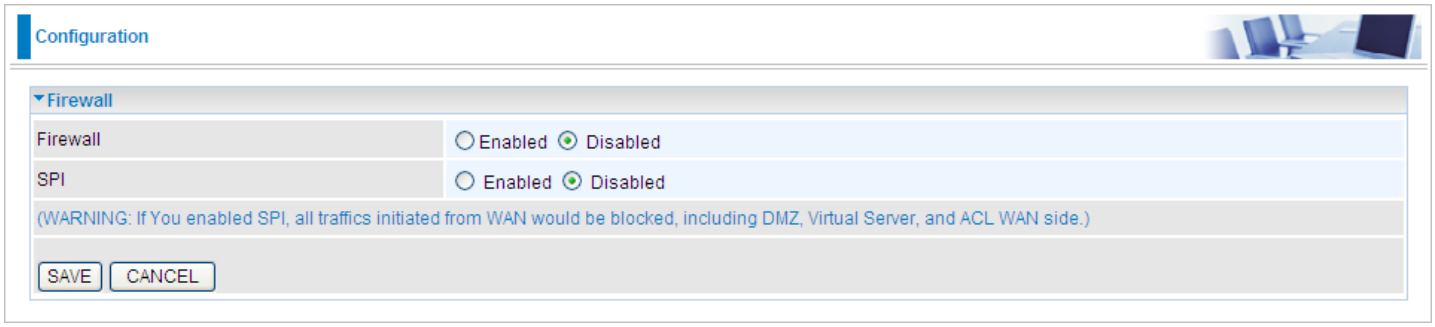
Advanced Setup

Advanced Step provides advanced features including **Firewall**, **Routing**, **NAT**, **Static DNS**, **QoS**, **Port Isolation**, **Interface Grouping**, and **Time Schedule** for advanced users.



Firewall

Your router includes a firewall for helping to prevent attacks from hackers. In addition to this, when using NAT (Network Address Translation) the router acts as a “natural” Internet firewall, since all PCs on your LAN use private IP addresses that cannot be directly accessed from the Internet.



Firewall: To automatically detect and block Denial of Service (DoS) attacks, such as Ping of Death, SYN Flood, Port Scan and Land Attack.

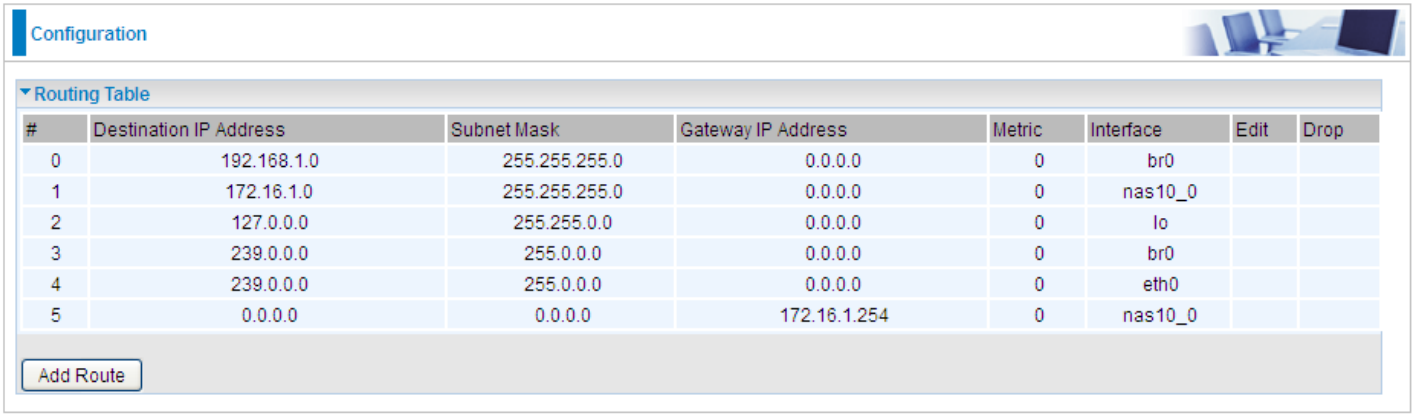
- **Enabled:** It activates your firewall function.
- **Disabled:** It disables the firewall function.

SPI: If you enabled SPI, all traffics initiated from WAN would be blocked, including DMZ, Virtual Server, and ACL WAN side.

- **Enabled:** It activates your SPI function.
- **Disabled:** It disables the SPI function.

Routing

This is static route feature. You are equipped with the capability to control the routing of all the traffic across your network. With each routing rule created, user can specifically assign the destination where the traffic will be routed to.



#: Item number

Destination IP Address: IP address of the destination network

Subnet Mask: The subnet mask of destination network.

Gateway IP Address: IP address of the gateway or existing interface that this route uses.

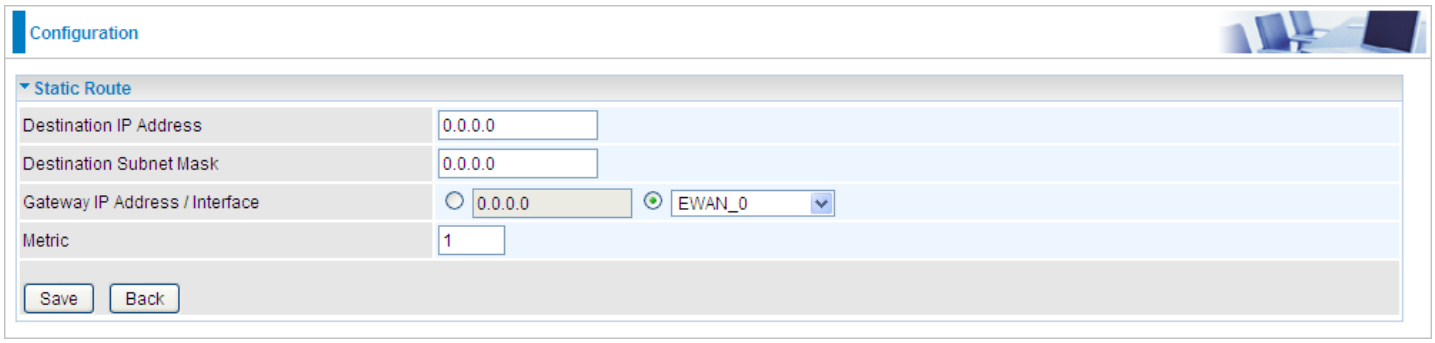
Metric: It represents the cost of transmission for routing purposes. The number need not be precise, but it must be between 1 and 15.

Interface: Media/channel selected to append the route.

Edit: Edit the route; this icon is not shown for system default route.

Drop: Drop the route; this icon is not shown for system default route.

Add Route



Destination IP Address: This is the destination subnet IP address.

Destination Subnet Mask: The subnet mask of destination network.

Gateway IP Address/Interface: This is the gateway IP address or existing interface to which packets are to be forwarded.

Metric: It represents the cost of transmission for routing purposes. The number need not be precise, but it must be between 1 and 15.

NAT

The NAT (Network Address Translation) feature transforms a private IP into a public IP, allowing multiple users to access the internet through a single IP account, sharing the single IP address. NAT break the originally envisioned model of IP end-to-end connectivity across the internet so NAT can cause problems where IPSec/ PPTP encryption is applied or some application layer protocols such as SIP phones are located behind a NAT. And NAT makes it difficult for systems behind a NAT to accept incoming communications.

In this session, there are “VPN Passthrough”, “SIP ALG”, “DMZ” and “Virtual Server” provided to solve these nasty problems.

NAT Status: Enabled. It depends on ISP Connection Type in Internet settings.

VPN Passthrough: VPN pass-through is a feature of routers which allows VPN client on a private network to establish outbound VPNs unhindered.

SIP ALG: Enable the SIP ALG when SIP phone needs ALG to pass through the NAT. Disable the SIP ALG when SIP phone includes NAT-Traversal algorithm.

Interface: Select to set DMZ/Virtual Server for “EWAN”, “3G/4G-LTE” or “3G/4G-LTE USB”.

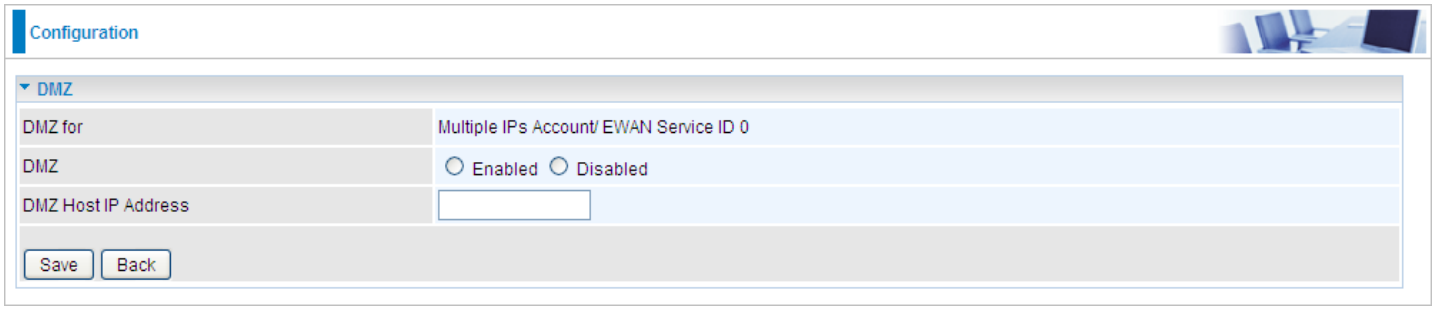
Service Index: Associated to EWAN interface marking each EWAN service (0-7), to select which EWAN service the DMZ and Virtual server are applied to.

Click **DMZ** Edit or **Virtual Server** Edit to move on to set the DMZ or Virtual Server parameters, which are represented in the following scenario.

DMZ

NOTE: This feature disables automatically if WAN connection is in BRIDGE mode.

The DMZ Host is a local computer exposed to the Internet. When setting a particular internal IP address as the DMZ Host, all incoming packets will be checked by the Firewall and NAT algorithms then passed to the DMZ host, when a packet received does not use a port number used by any other Virtual Server entries.



DMZ for: Indicate the related WAN interface which allows outside network to connect in and communicate. **Note:** Here you can see the Multiple IPs Account/EWAN Service ID 0. It is the interface set in the previous NAT page.

DMZ:

- **Enabled:** It activates your DMZ function.
- **Disabled:** It disables the DMZ function.

DMZ Host IP Address: Give a static IP address to the DMZ Host when **Enabled** radio button is checked. Be aware that this IP will be exposed to the WAN/Internet.

Select the **Save** button to apply your changes.

Virtual Server

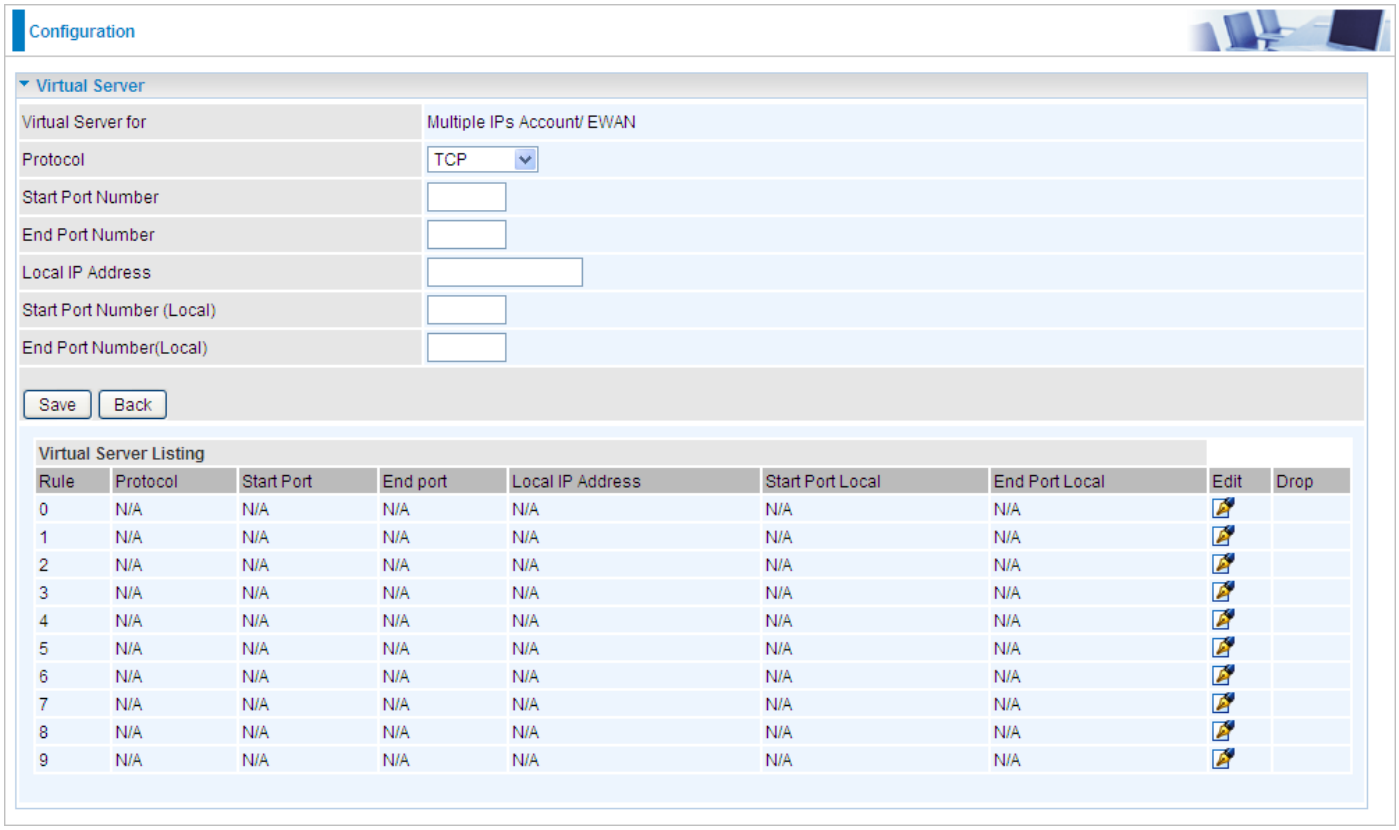
NOTE: This feature disables automatically if WAN connection is in BRIDGE mode.

In TCP/IP networks, a port is a 16-bit number used to identify which application program (usually a server) incoming connections should be delivered to. Some ports have numbers that are pre-assigned to them by the IANA (the Internet Assigned Numbers Authority), and these are referred to as “well-known ports”. Servers follow the well-known port assignments so clients can locate them.

If you wish to run a server on your network that can be accessed from the WAN (i.e. from other machines on the Internet that are outside your local network), or any application that can accept incoming connections (e.g. Peer-to-peer/P2P software such as instant messaging applications and P2P file-sharing applications) and are using NAT (Network Address Translation), then you will usually need to configure your router to forward these incoming connection attempts using specific ports to the PC on your network running the application. You will also need to use port forwarding if you want to host an online game server.

The reason for this is that when using NAT, your publicly accessible IP address will be used by and point to your router, which then needs to deliver all traffic to the private IP addresses used by your PCs. Please see the **WAN** configuration section of this manual for more information on NAT.

The device can be configured as a virtual server so that remote users accessing services such as Web or FTP services via the public (WAN) IP address can be automatically redirected to local servers in the LAN network. Depending on the requested service (TCP/UDP port number), the device redirects the external service request to the appropriate server within the LAN network.



Virtual Server for: Indicate the related WAN interface which allows outside network to connect in and communicate.

Protocol: Choose the application protocol.

Start / End Port Number: Enter a port or port range you want to forward.

(Example: Start / End: 1000 or Start: 1000, End: 2000).

The starting greater than zero (0) and the ending port must be the same or larger than the starting port.

Local IP Address: Enter your server IP address in this field.

Start / End Port Number (Local): Enter the start / end port number of the local application (service).

Examples of well-known and registered port numbers are shown below. For further information, please see IANA's website at http://www.iana.org/assignments/port-numbers

Well-known and Registered Ports

Port Number	Protocol	Description
21	TCP	FTP Control
22	TCP & UDP	SSH Remote Login Protocol
23	TCP	Telnet
25	TCP	SMTP (Simple Mail Transfer Protocol)
53	TCP & UDP	DNS (Domain Name Server)
69	UDP	TFTP (Trivial File Transfer Protocol)
80	TCP	World Wide Web HTTP
110	TCP	POP3 (Post Office Protocol Version 3)
443	TCP & UDP	HTTPS
1503	TCP	T.120
1720	TCP	H.323
7070	UDP	RealAudio

Using port forwarding does have security implications, as outside users will be able to connect to PCs on your network. For this reason you are advised to use specific Virtual Server entries just for the ports your application requires, instead of using DMZ. As doing so will result in all connections from the WAN attempt to access to your public IP of the DMZ PC specified.

Attention

If you have disabled the NAT option in the WAN-ISP section, the Virtual Server function will hence be invalid.
If the DHCP server option is enabled, you have to be very careful in assigning the IP addresses of the virtual servers in order to avoid conflicts. The easiest way of configuring Virtual Servers is to manually assign static IP address to each virtual server PC, with an address that does not fall into the range of IP addresses that are to be issued by the DHCP server. You can configure the virtual server IP address manually, but it must still be in the same subnet as the router.

Example : How to setup Port Forwarding for port 21 (FTP server)

If you have a FTP server in your LAN network and want others to access it through WAN.

Step 1: Assign a static IP to your local computer that is hosting the FTP server.

Step 2: Login to the Gateway and go to **Configuration / Advanced Setup / NAT / Virtual Server.**

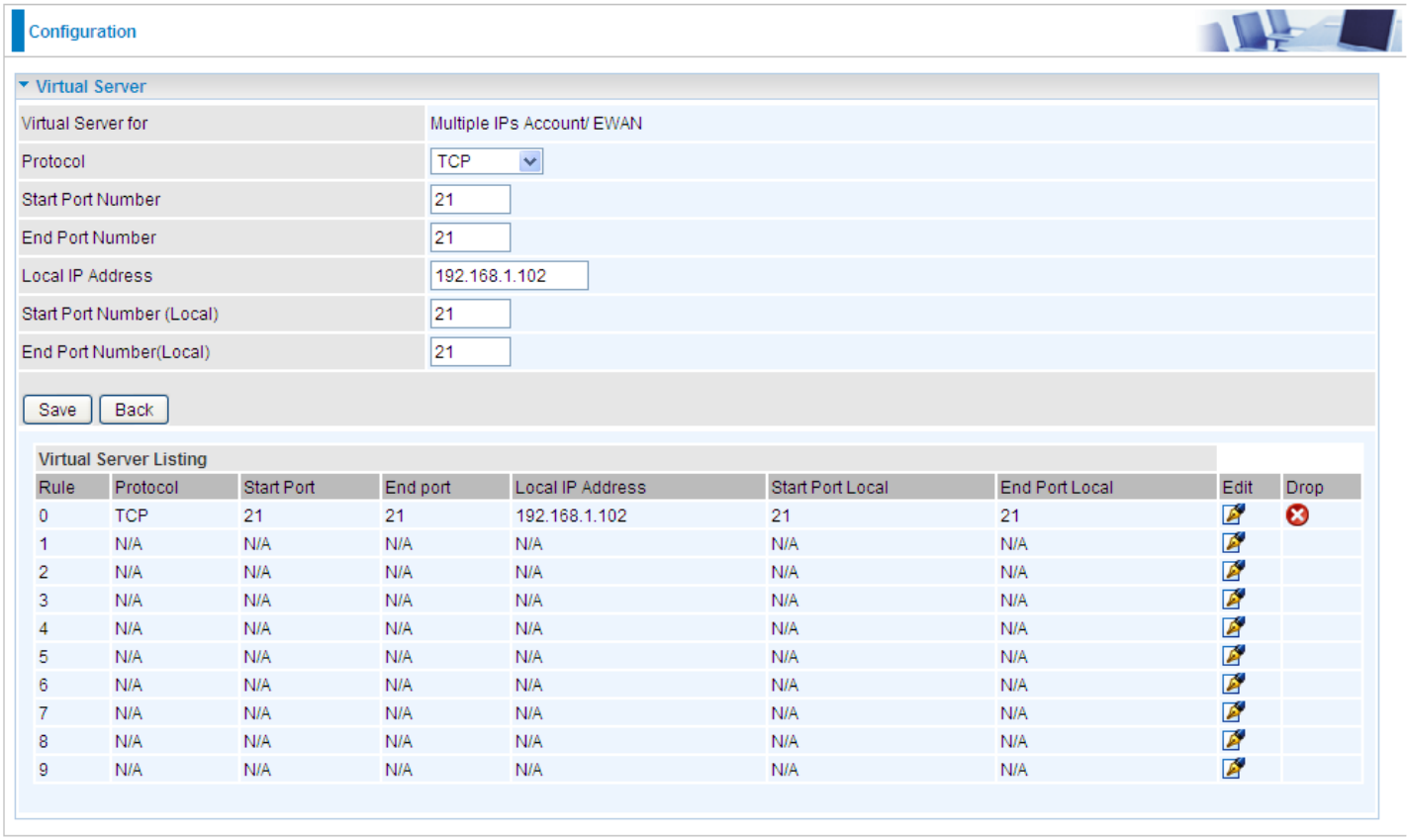
FTP server uses TCP protocol with port 21.

Enter ”21” to Start and End Port Number. BEC 9800VN will accept port 21 requests from WAN side.

Eneter the static IP assiged to the local PC that is hosting the FTP server. Ex: 192.168.1.102

Enter ”21” to Local Start and End Port number. BEC 9800VN will forward port 21 request from WAN to the specific LAN PC (ex:192.168.1.102) in the network.

Step 3: Click **Save** to save settings.

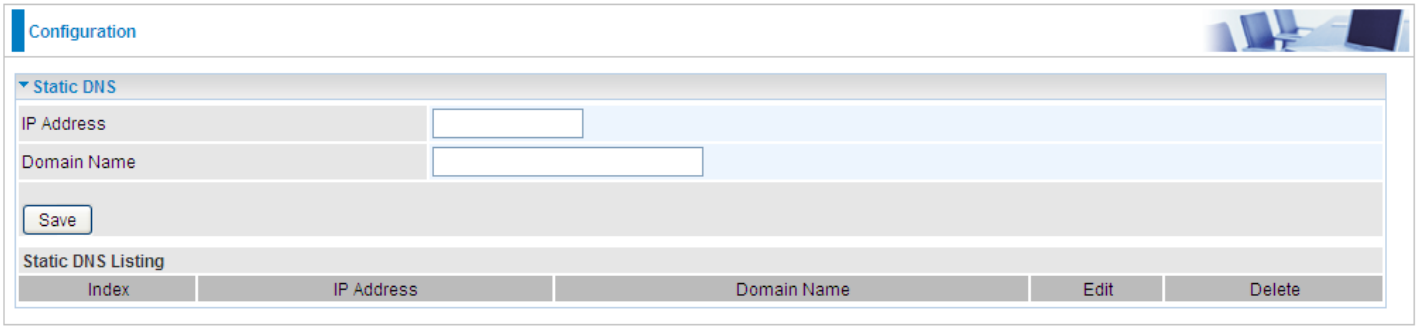


Static DNS

The Domain Name System (DNS) is a hierarchical naming system built on a distributed database for computers, services, or any resource connected to the Internet or a private network associates various information with domain names assigned to each of the participating entities. Most importantly, it translates domain names meaningful to humans into the numerical identifiers associated with networking equipment for the purpose of locating and addressing these devices worldwide.

An often-used analogy to explain the Domain Name System is that it serves as the phone book for the Internet by translating human-friendly computer hostnames into IP addresses. For example, the domain name www.example.com can be translated into the addresses 192.0.32.10 (IPv4).

Static DNS is a concept relative to Dynamic DNS, in static DNS system, the IP mapped is static without change.



IP Address: The IP address you are going to give a specific domain name.

Domain Name: The friendly domain name for the IP address.

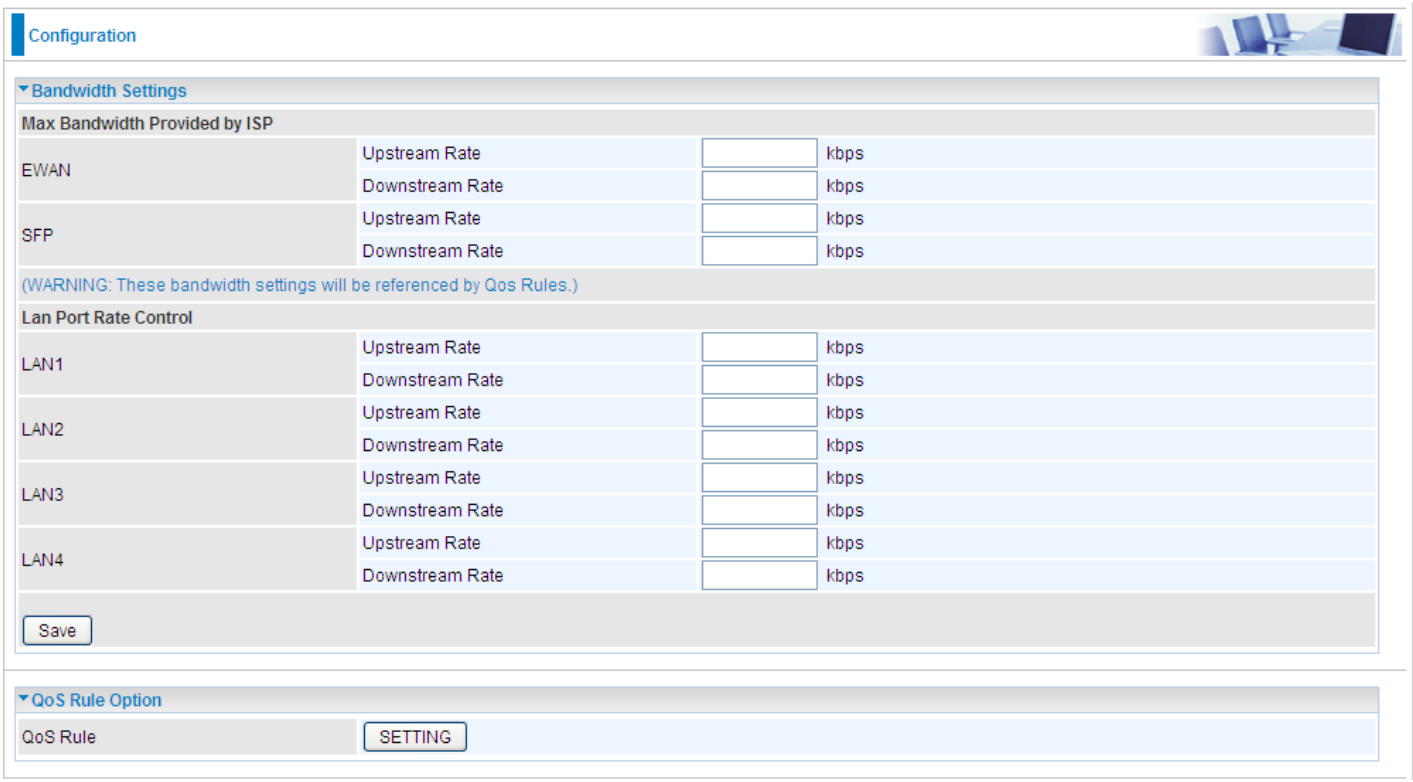
Press **Save** button to apply your settings.

QoS

QoS helps you control the upload traffic of each application from LAN (Ethernet and/or Wireless) to WAN (Internet).

It facilitates you the features to control the quality of throughput for each application. This is useful when there on certain types of data you want giver higher priority to, such as voice data packets given higher priority than web data packets.

Note: EWAN/SFP line speed is based on the rate provided by ISP



EWAN Upstream / Downstream: Specify the upstream and downstream rate of the EWAN interface.

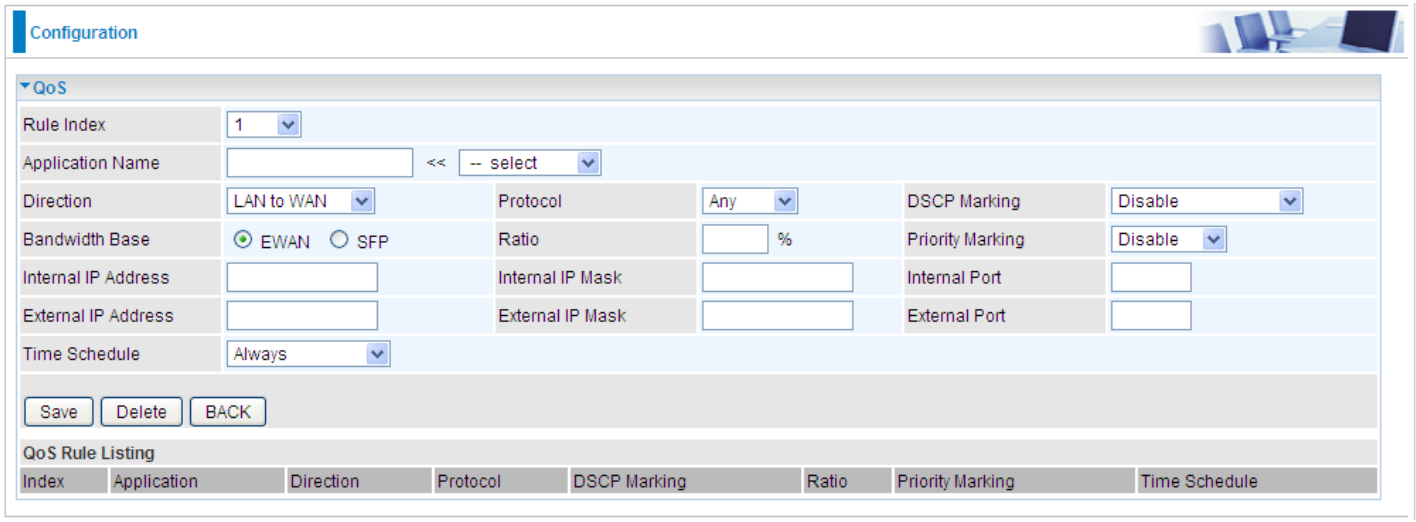
SFP Upstream / Downstream: Specify the upstream and downstream rate of the SFP interface.

LAN1-4 Upstream / Downstream: Specify the upstream and downstream rate of the LAN1-LAN4 interface.

Note: The above bandwidth(rate) settings will be taken as a reference by QoS rules.

Click **Save** to save the EWAN rate settings.

Click **SETTING** to add QoS rules (up to **32** QoS rules).



Rule Index: Index marking for each rule up to maixmum of 32.

Application Name: Assign a name that identifies the new QoS application rule. Select from the list box for quick setup.

Direction: Shows the direction mode of the QoS application.

- **LAN to WAN:** You want to control the traffic from local network to the outside (Upstream). You can assign the priority for the application or you can limit the rate of the application.

  Ex: you have a FTP server inside the local network, and you want to have a limited control by the QoS policy and so you need to add a policy with LAN to WAN direction setting.

- **WAN to LAN:** Control traffic from WAN to LAN (Downstream).

Protocol: Select the supported protocol (Any, TCP, UDP, ICMP, GRE) from the drop down list.

DSCP Marking: Differentiated Services Code Point (DSCP), it is the first 6 bits in the ToS byte. DSCP Marking allows users to classify the traffic of the application to be executed according to the DSCP value.

DSCP Mapping Table

DSCP Mapping Table	
(Wireless) ADSL Router	Standard DSCP
Disabled	None
Best Effort	Best Effort (000000)
Premium	Express Forwarding (101110)
Gold service (L)	Class 1, Gold (001010)
Gold service (M)	Class 1, Silver (001100)
Gold service (H)	Class 1, Bronze (001110)
Silver service (L)	Class 2, Gold (010010)
Silver service (M)	Class 2, Silver (010100)
Silver service (H)	Class 2, Bronze (010110)
Bronze service (L)	Class 3, Gold (011010)
Bronze service (M)	Class 3, Silver (011100)

Bronze service (H)	Class 3, Bronze (011110)

Bandwidth Base: Select SFP or EWAN as the bandwidth base whose upstream/downstream data rate is pre-set in the previous page.

Ratio: The rate percent of each application/policy compared to total traffic on the interface. For example, we want to only allow 20% of the total data (note that the Bandwidth base, the ratio is based on the bandwidth base)for the LAN-to-WAN direction to be used for FTP server. Then we can specify here with data ratio = 20.

Priority: Set the priority given to each policy/application. Specify the priority for the use of bandwidth. You can specify which application can have higher priority to acquire the bandwidth. You may adjust this setting to fit your policy / application.

Internal IP Address: The IP address values for Local LAN devices you want to give control.

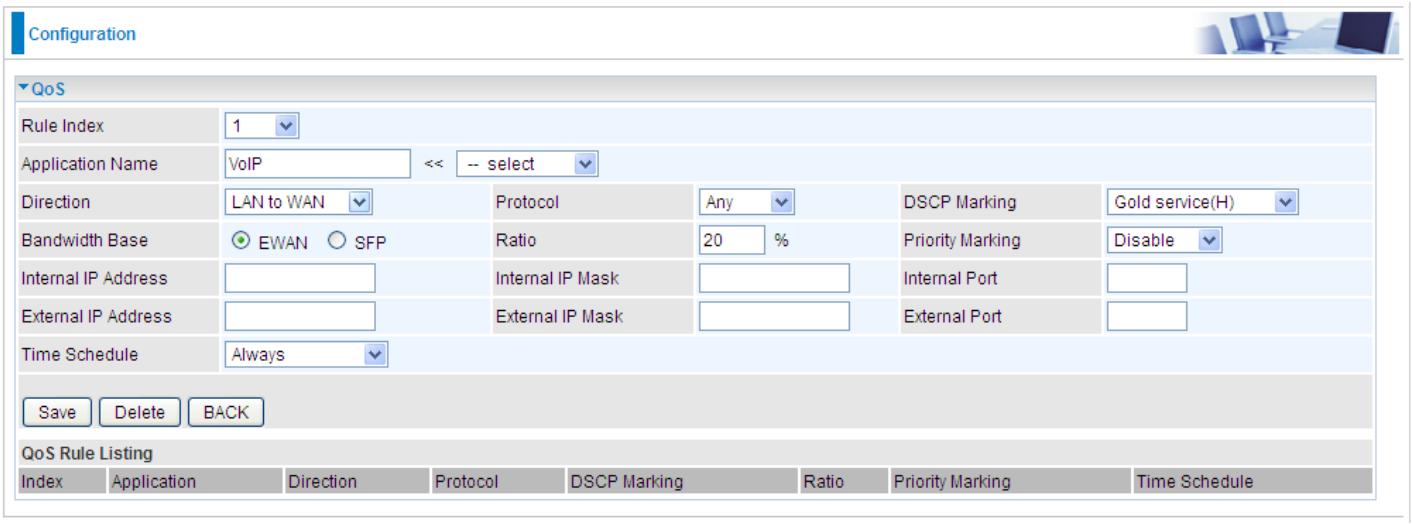
Internal Port: The Port number on the LAN side, it is used to identify an application.

External IP Address: The IP address on remote / WAN side.

External Port: The Port number on the remote / WAN side.

Time Schedule: Select or set exactly when the rule works..

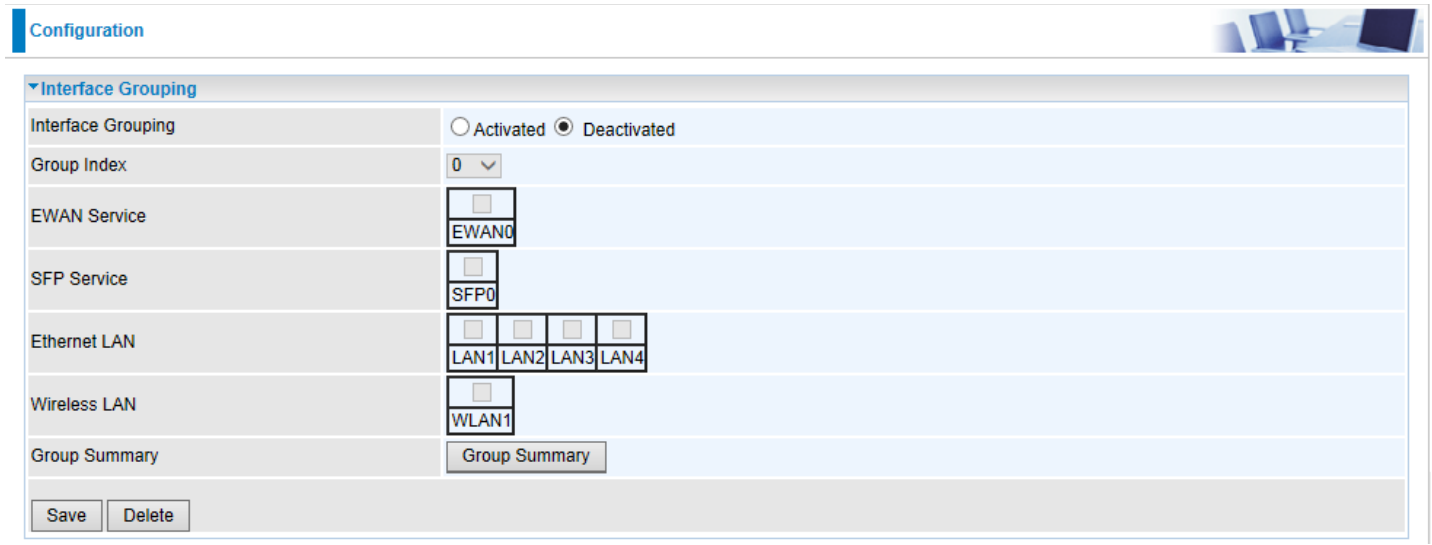
For example, you can give outgoing VoIP traffic more bandwidth to ensure the quality of bandwidth-sensitive audio service.



Interface Grouping

Interface grouping is a function to group interfaces, known as VLAN. A Virtual LAN, commonly known as a VLAN, is a group of hosts with the common set of requirements that communicate as if they were attached to the same broadcast domain, regardless of the physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same network switch. Similarly, they may also have been split into two different groups, even if they are on the same switch.

Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the **Save** button.



Interface Grouping: Select **Yes** to enable Interface Grouping feature.

Group Index: The index number indicating the current group ranging from 0 to 15.

EWAN Service: The available EWAN interface. Move to Interface Setup to add other EWAN interface.

SFP Service: The available SFP interface.

Ethernet LAN: The available Ethernet ports.

Wireless LAN: The available wireless port(s).

Group Summary: Press **PortBinding Summary** to check the current group information.

Example: Create two EWAN services, Service0 (PPPoE) and Service1 (Bridge).

Status

Service Information Summary

WAN 0	Active	ISP	IP Address
0	Yes	Dynamic	Dynamic
1	Yes	Bridge	N/A
2	No	Bridge	N/A
3	No	Bridge	N/A
4	No	Bridge	N/A
5	No	Bridge	N/A
6	No	Bridge	N/A
7	No	Bridge	N/A

You are going to group the ports and services into two working group, as shown below.

Group Index	Group Port
0	EWAN0,LAN1, LAN2, WLAN1
1	EWAN1, LAN3

Configuration

Interface Grouping

Interface Grouping	Activated / Deactivated
Group Index	0
EWAN Service	EWAN0, EWAN1
Ethernet LAN	LAN1, LAN2, LAN3
Wireless LAN	WLAN1
Group Summary	Group Summary

Save Delete

Configuration

Interface Grouping

Interface Grouping	Activated / Deactivated
Group Index	1
EWAN Service	EWAN0, EWAN1
Ethernet LAN	LAN1, LAN2, LAN3
Wireless LAN	WLAN1
Group Summary	Group Summary

Save Delete

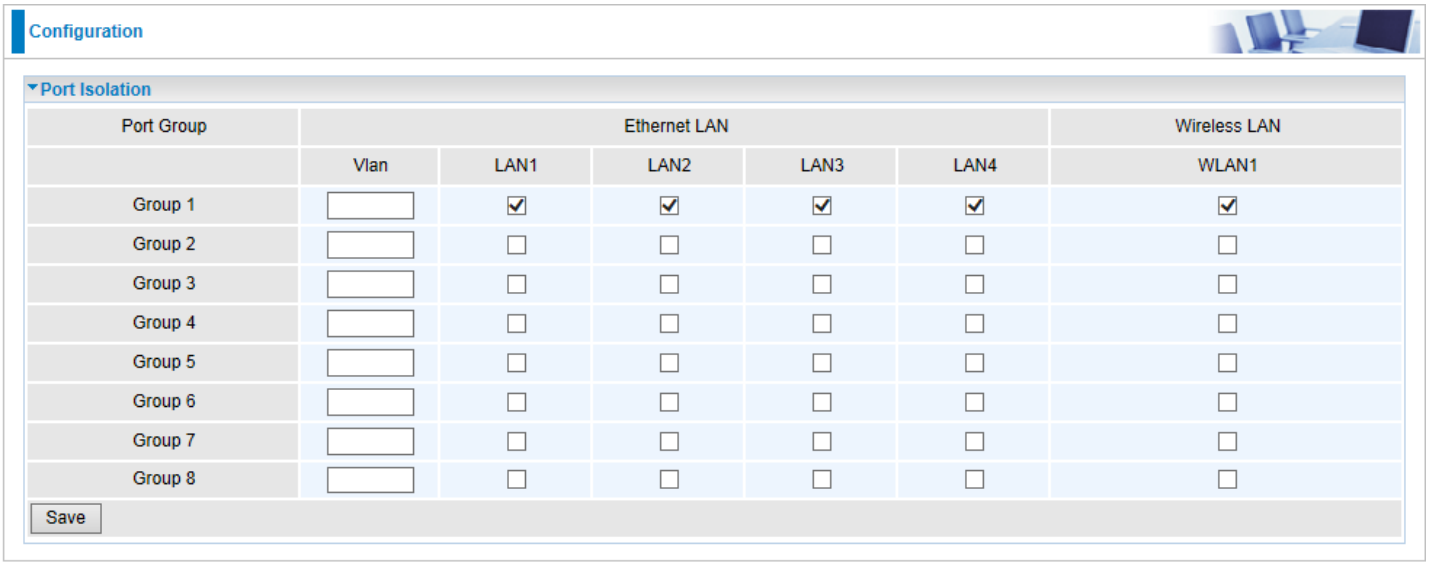
Click **Group Summary** to show the configuration results.

Group ID	Group port
0	wan0_0,e1,e2,w1
1	wan0_1,e3

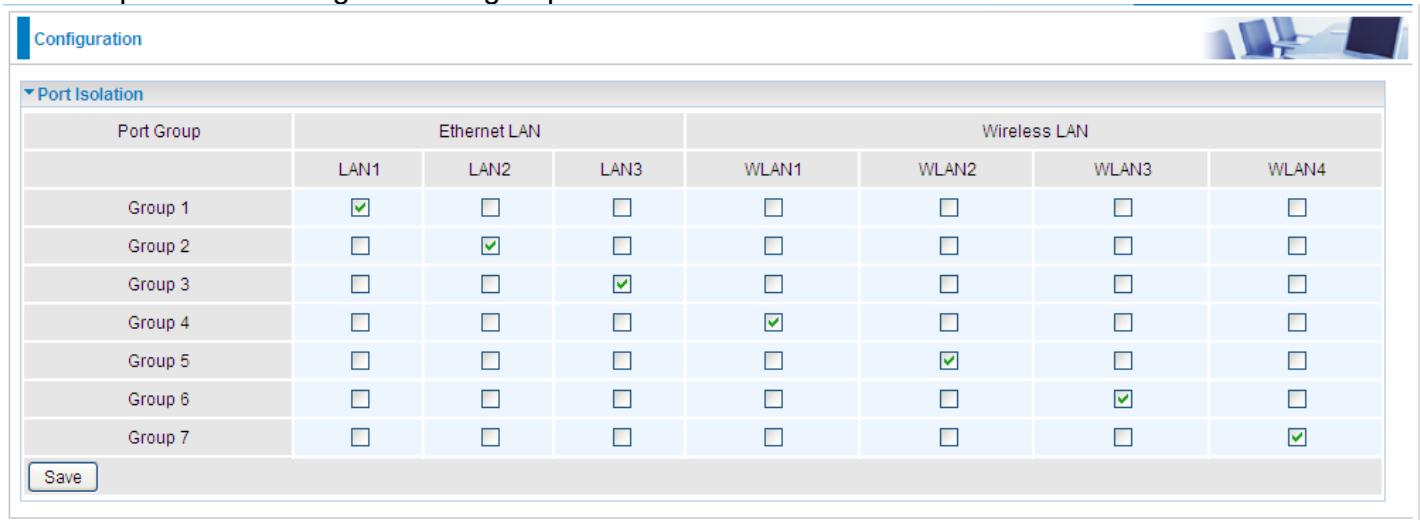
Port Isolation

Port isolation is to prevent LAN (Wired or Wireless) devices, e.g. PC, Notebook, to associate or communicate with each other devices. By default, all ports (LAN port and WLAN port) are sharing one group, and devices in all these ports can have access to each other.

NOTE: The maximum WLAN (Wireless SSID) is up to 4. By default, only a SSID is being activated.

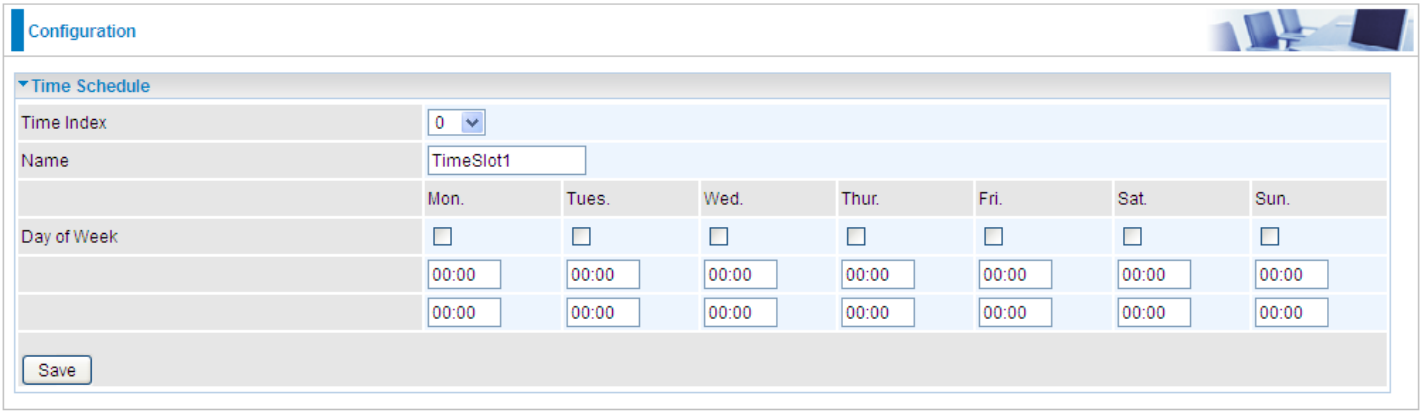


The most typical one example is to isolate all port from each other shown below. Each port has its own group; under this circumstance, devices connected to each port have no access to other devices connected to other ports. This is a special example, and users can change the settings to determine how the ports are belonged to the group.



Time Schedule

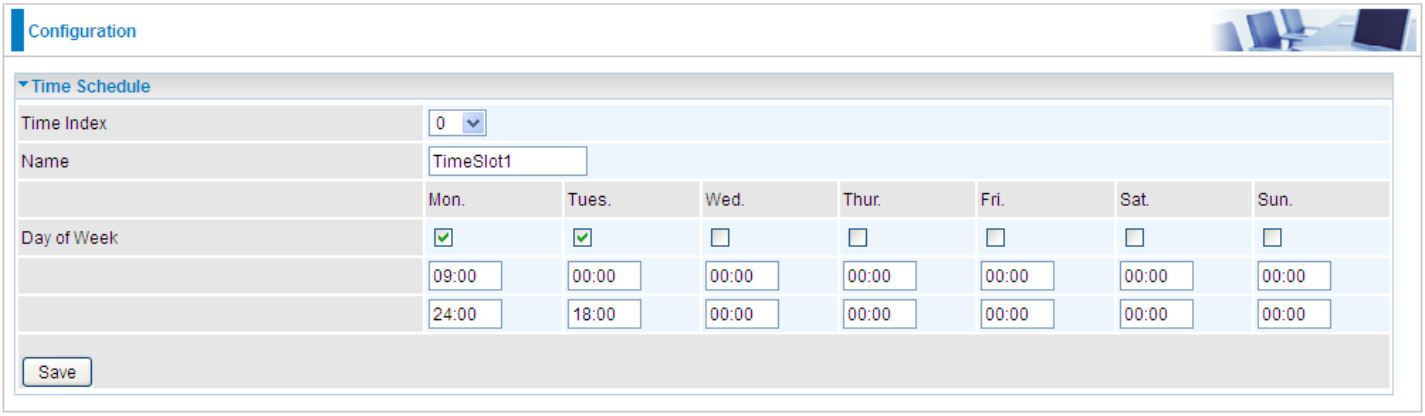
The Time Schedule supports up to **16** timeslots which helps you to manage your Internet connection. In each time profile, you may schedule specific day(s) i.e. Monday through Sunday to restrict or allowing the usage of the Internet by users or applications.
This Time Schedule correlates closely with router's time, since router does not have a real time clock on board; it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server from the Internet.



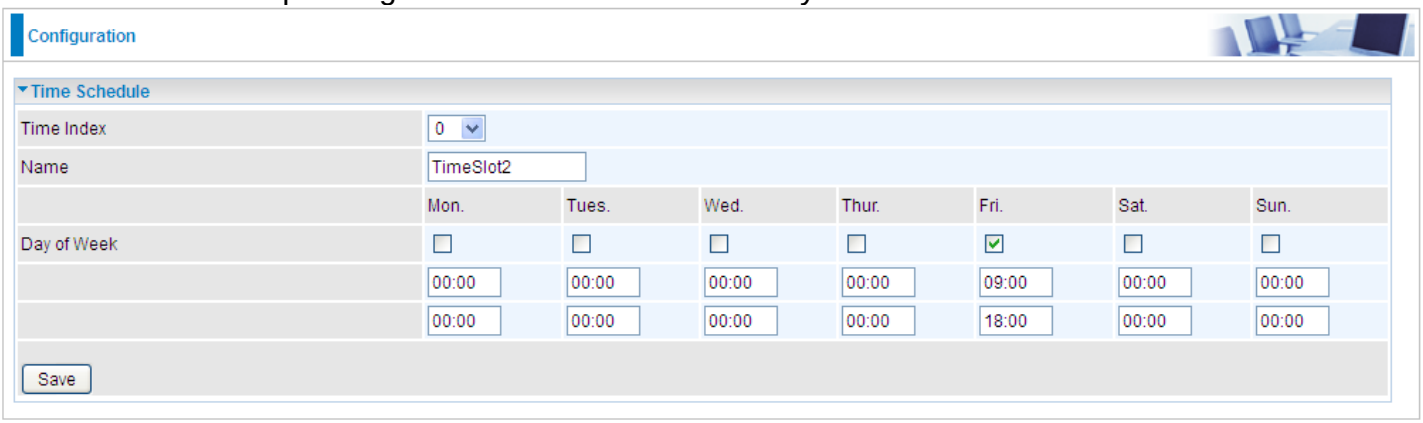
Time Index: The rule index (0-15) for identifying each timeslot.

Name: User-defined identification for each time period.

Day of Week: Mon. to Sun. Specify the time interval for each timeslot from "Day of Week". For example, user can add a timeslot named "TimeSlot1" which features a period from 9:00 of Monday to 18:00 of Tuesday.



Another TimeSlot2 spanning from 09:00 to 18:00 of Friday



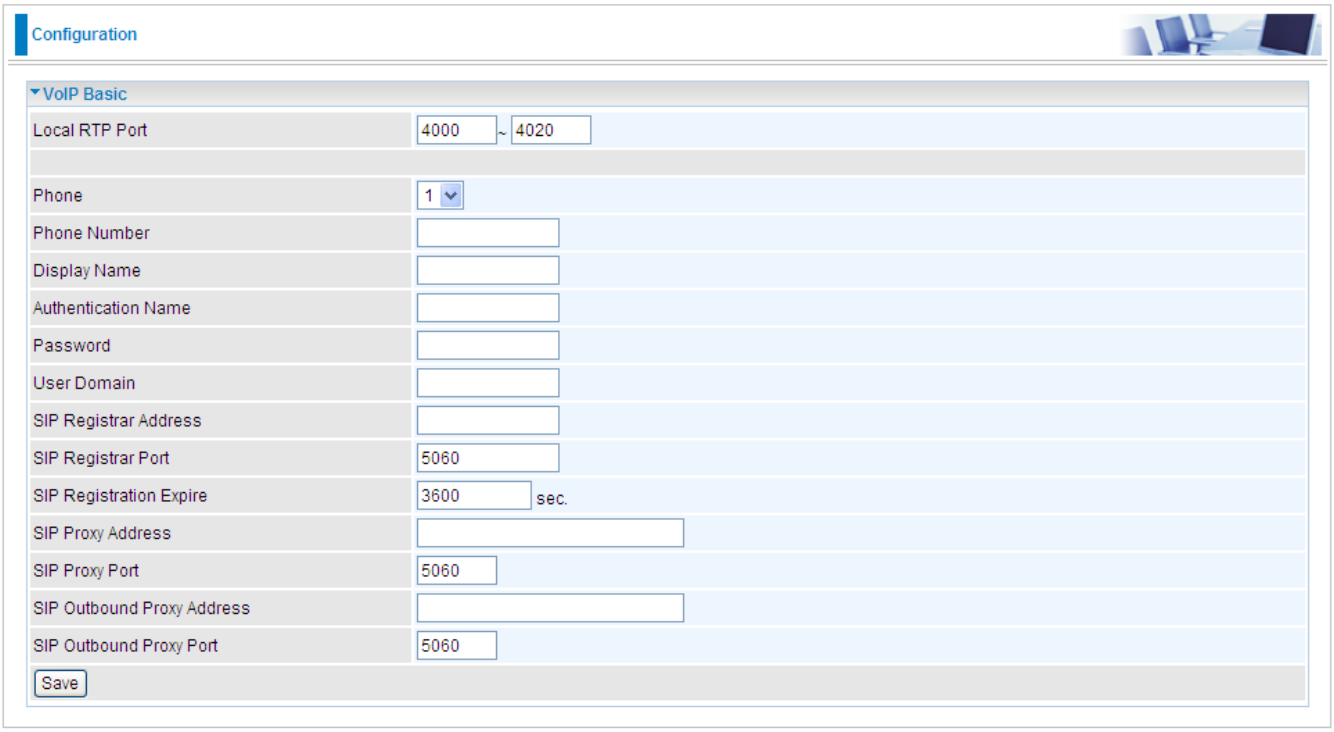
VoIP

VoIP, or Voice over Internet Protocol, enables telephone calls through existing internet connections instead of going through the traditional PSTN (Public Switched Telephone Network). It is not only cost-effective, especially for a long-distance call, but also top quality voice calls over the internet.

This section covers **Basic**, **Media**, **Advanced**, **Speed Dial**,and **Call Features** of VoIP.

Basic

Register to a SIP service provider is an essential step before making the VoIP call. You can find out this information from your SIP service provider.



Locale RTP Port: Set the local RTP port range used to receive voice packet. This setting applies to both the phone ports, Phone_1 and Phone_2, and these phone ports share the same local RTP port.

Phone: Select “1”, the following parameters will be applicable to Phone1. In BEC 9800VN, Phone_1 and Phone_2 are allowed to be of different characteristics, including different SIP registrar. You need to configure individually for phone1 and phone 2 and can have up to 2 different VoIP accounts.

Phone Number: Set your phone number or outgoing call number, which is usually obtained when registering in your ITSP. It is used for destination to identify which this call is made from.

Display Name: A user-friendly display name for the phone number to be easily identified.

Authentication Name: Set the account used to register, usually the Phone Number.

Password: Set the registering account password.

User Domain: Set the SIP Registrar Domain name you are going to register to, usually just the SIP registrar address.

SIP Registrar Address: Enter the SIP registrar address where offers the service of registering the VoIP account. It is definitely a VoIP server.

SIP Registrar Port: Type the port; it will listen to register requests from VoIP devices.

SIP Registration Expire: Set the time interval. The device can update (usually re-login the account) the VoIP account information with the SIP server very the time interval.

SIP Proxy Address: Enter the SIP proxy address provided by your ITSP. When destination and source phones are not sharing the same SIP registrar domain, the SIP proxy is needed to deliver call information and make the communication through.

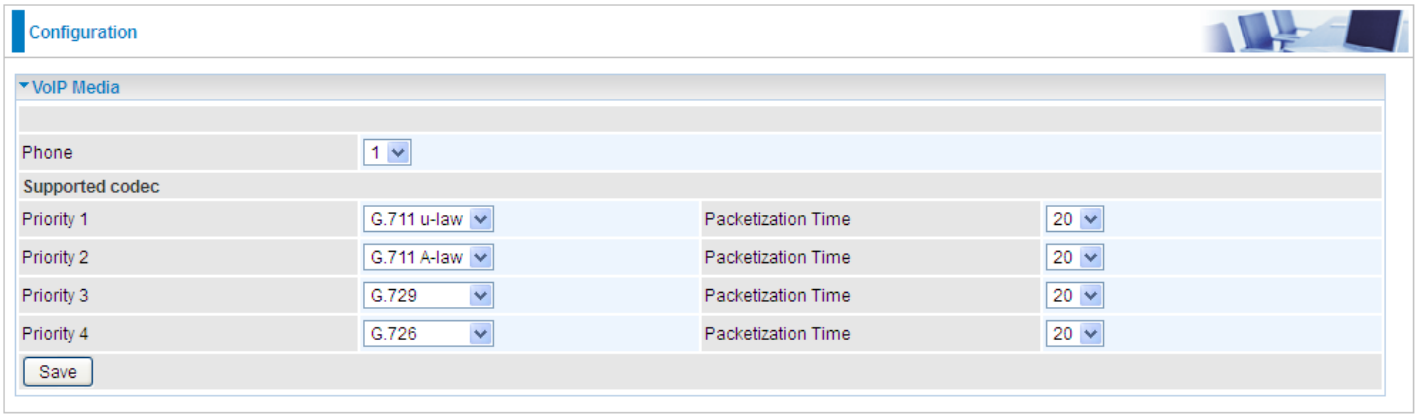
SIP Proxy Port: Set the SIP proxy port.

SIP Outbound Proxy Address: Set the SIP outbound proxy address. It is usually used to realize the communication between two phones when at least one of them is located behind a NAT router.

SIP Outbound Proxy Port: Set the SIP Outbound proxy port.

Media

Media offers for kinds of codec, G.711 u-law, G.711 A-law, G.729, G.726, from greatest to lowest in priority.

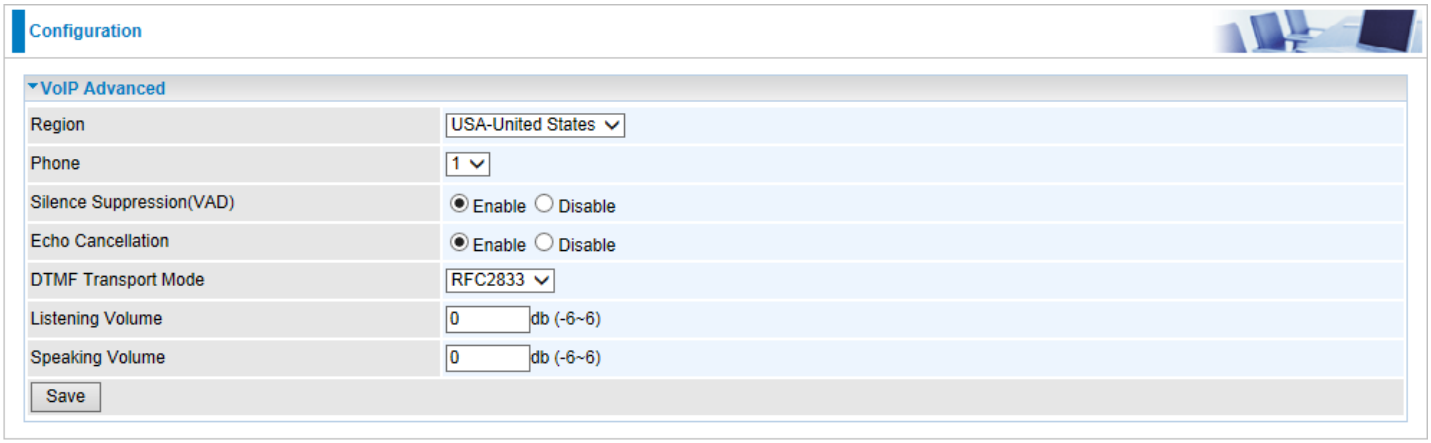


Phone: Select to set the following configurations for Phone 1 or Phone2. When phone1 is selected, the following set media codec will be applied to phone1.

- **G.711u-Law:** It is a basic non-compressed encoder and decoder technique. μ-LAW uses pulse code modulation (PCM) encoder and decoder to convert 14-bit linear sample.
- **G.711A-LAW:** It is a basic non-compressed encoder and decoder technique. A-LAW uses pulse code modulation (PCM) encoder and decoder to convert 13-bit linear sample into 8-bit value.
- **G.729**: It is used to encoder and decoder voice information into a single packet which reduces the bandwidth consumption.
- **G.726:** It is an ITU-T ADPCM speech codec standard covering the transmission of voice at rates of 32kbit/s.

Advanced

Advance section equipment the users with the ability to do some advanced settings to each phone port. Go on to see.



Region: Select the exact region from the drop-down menu to adjust the phone custom in the exact region, like ring tone, busy tone, dial tone, etc, as different regions may have different phone using traditions. The setting is to be applied to both phone 1 and phone 2.

Phone: Select the phone 1 or Phone 2 to have the following configurations applied to the phone.

Silence Suppression (VAD): Enable to minimize the use of bandwidth by automatically decreasing transmission of background noise when the device detects on voice input by the user on the phone.

Echo Cancellation: Enable to cancel echo for the other side in communication so as to make a clear listening environment. In order to avoid the other side in communication hearing the echo, please enable echo cancellation.

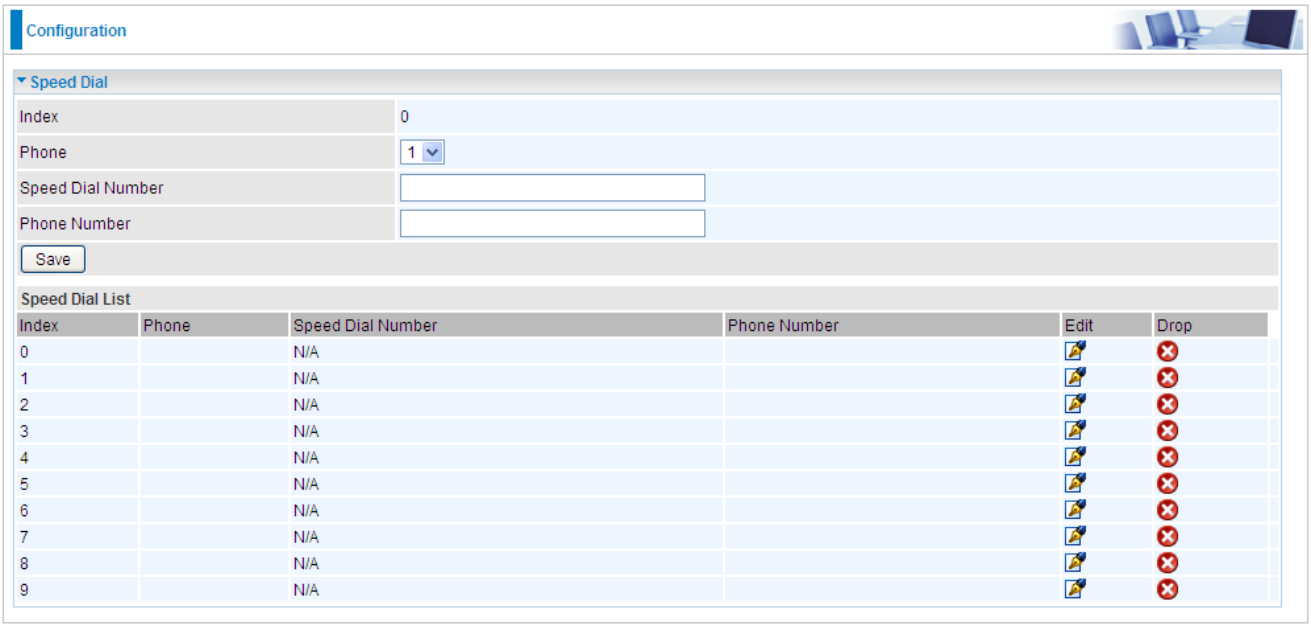
DTMF Transport Mode: Select the DTMF mode.

Listening Volume: Adjust the volume of listener, -6 to 6, from lowest to highest.

Speaking Volume: Adjust the volume of microphone; -6 to 6, from lowest to highest.

Speed Dial

Speed Dial comes at hand to store frequently used telephone number(s) that you can press set 'speed dial number' instead of the exact dialing-out number on the phone keyboard to make a quick dialing.



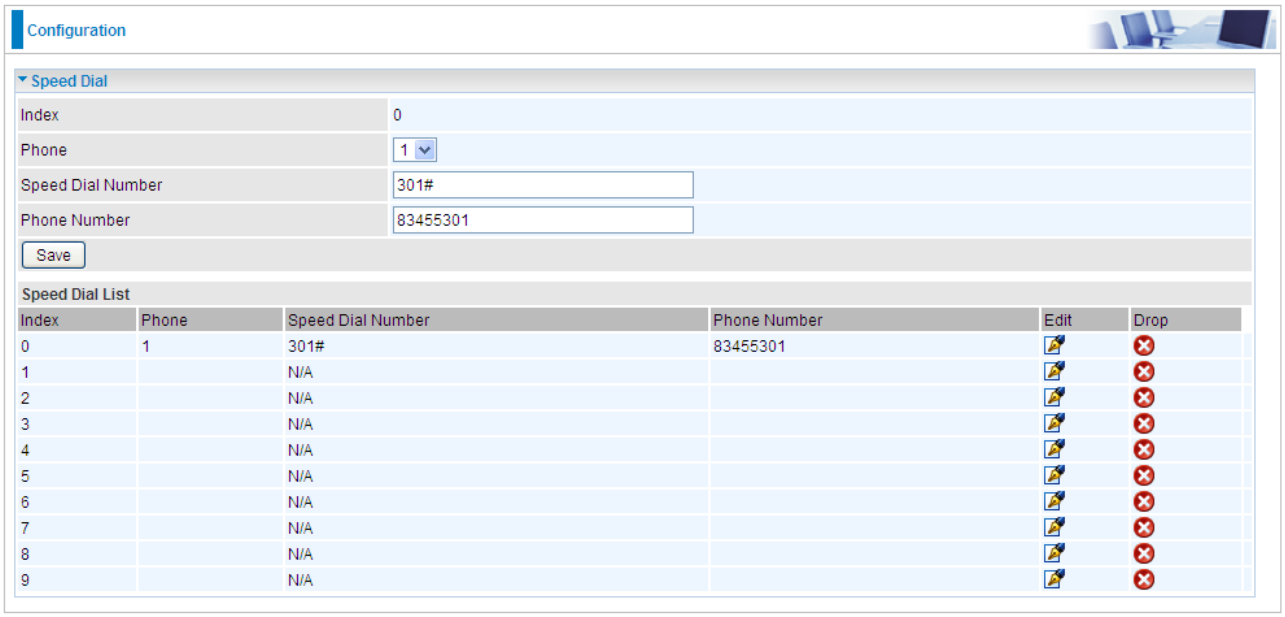
Index: The index to mark the speed dial number mapping, 0-9.

Phone: Select Phone 1 or Phone 2 to have your set speed dial number applied to the phone. If phone 1 is selected, your set speed dial number is about to be applied to phone 1.

Speed Dial Number: Set an easily remembered and simple number to replace the Phone number, it can be a sequence in varying length from 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 *. #, but note * or # must be included in the sequence.

Phone Number: The complete destination number

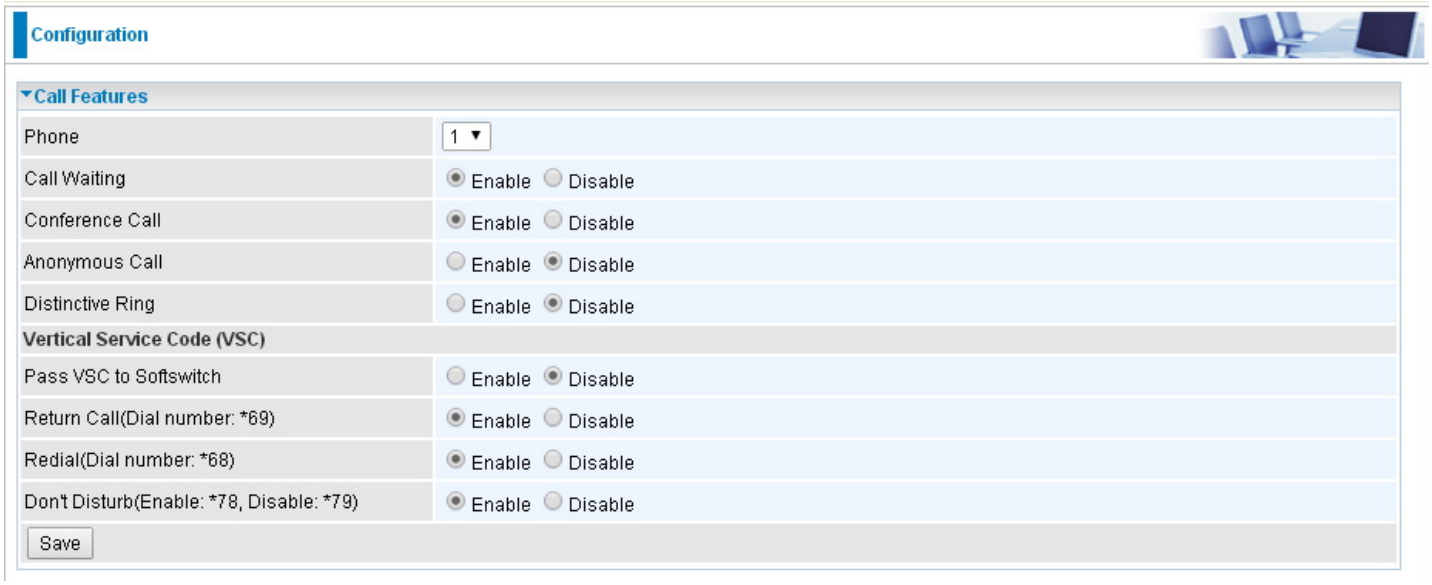
Example: Save phone number 83455301 to the speed dial list.



When you want call 83455301 through phone 1, you can simply dial 301# to make your desired call.

Call Features

Call Features provides users with some advanced phone characteristics, including Call waiting, Conference Call, etc.



Phone: Select the phone 1 or Phone 2 to have the following characteristics applied to the phone.

Call Waiting: Enable to activate Call Waiting feature. When you are busy on a call with, for example, A, and another call comes in, B, while the Call Waiting feature is enabled, you can hear a hint sound indicating there is another call in for you to decide to answer B by pressing the “flash” button on the phone to keep the original call with A.

Conference Call: Enable to allow 3-way conference call. Please note, only 3 parties are allowed (device, A, and B).

Anonymous Call: This feature enables you to restrict your phone number from displaying to the called party. When enabled, your phone number will be withheld and not be revealing to the called party.

Distinctive Ring: This call feature is only available from a VoIP Service Provider which enables each telephone number to have a distinctive ring sound.

Note: Before enabling this feature, please consult with your VoIP Service Provide to be sure it can be supported.

There is a ringtone list available in the BEC 9800VN, after enabling this feature, your BEC 9800VN will adapt a specific ring pattern on the list requested by your VoIP Service Provider for a specific telephone number.

When it is being disabled, all income calls will adapt the default ringtone for all telephone lines.

Pass VSC to Softswitch:

- **Enable** to pass VSC(Vertical Service Code) to the SIP server of ITSP which allows the SIP server to handle all its unique calling features such as Return Call, Call Redial, Don’t Disturb, etc. Under this circumstance, users need to pay for such service, please ensure you check with your SIP provider for more information.
- **Disable** to let the BEC 9800VN to handle all available call features.

Return Call (Dial number: *69): Dial *69 to redial the latest incoming call number.

Redial (Dial number: *68): Dial *68 to redial the latest outgoing call number.

Don’t Disturb (Enable: *78, Disable: *79): Press *78 to enable Don’t Disturb feature so as to make it

not ring when a call comes in; while press *79 to disable Don’t Disturb feature, if a call comes with a ringing indication.

Example: How to establish 3-way conference call

Case 1: Bill and Larry are talking. Bill wants to invite Mark to join a conference call.

Step – 1: Billy and Larry are discussing on the phone. Bill tells Larry that he wants to set up a conference call with Mark.

Step – 2: Bill presses flash (hold original call), and Bill hears the dial tone.

Step – 3: Bill calls Mark. Bill and Mark are on a new call.

Step – 4: Bill tells Mark that Mark is invited to join a conference call.

Step – 5: Bill presses flash (hold new call) and return to original call.

Step – 4: Bill tells Larry that Mark is on the phone.

Step – 6: Bill presses flash again to merge all 3 calls.

Step – 7: Bill, Larry and Mark hold a 3-way conference call from now on.

Case 2: When Bill and Larry are talking on the phone, Bill received a phone call from Mark. Bill decided to ask Mark to join the conference call.

Step – 1: Bill and Larry on a call, then Mark dials Bill and Bill hears a waiting tone.

Step – 2: Bill presses flash and picks up the call waiting call.

Step – 3: Bill tells Mark that he and Larry are talking on the phone; they can have a conference call.

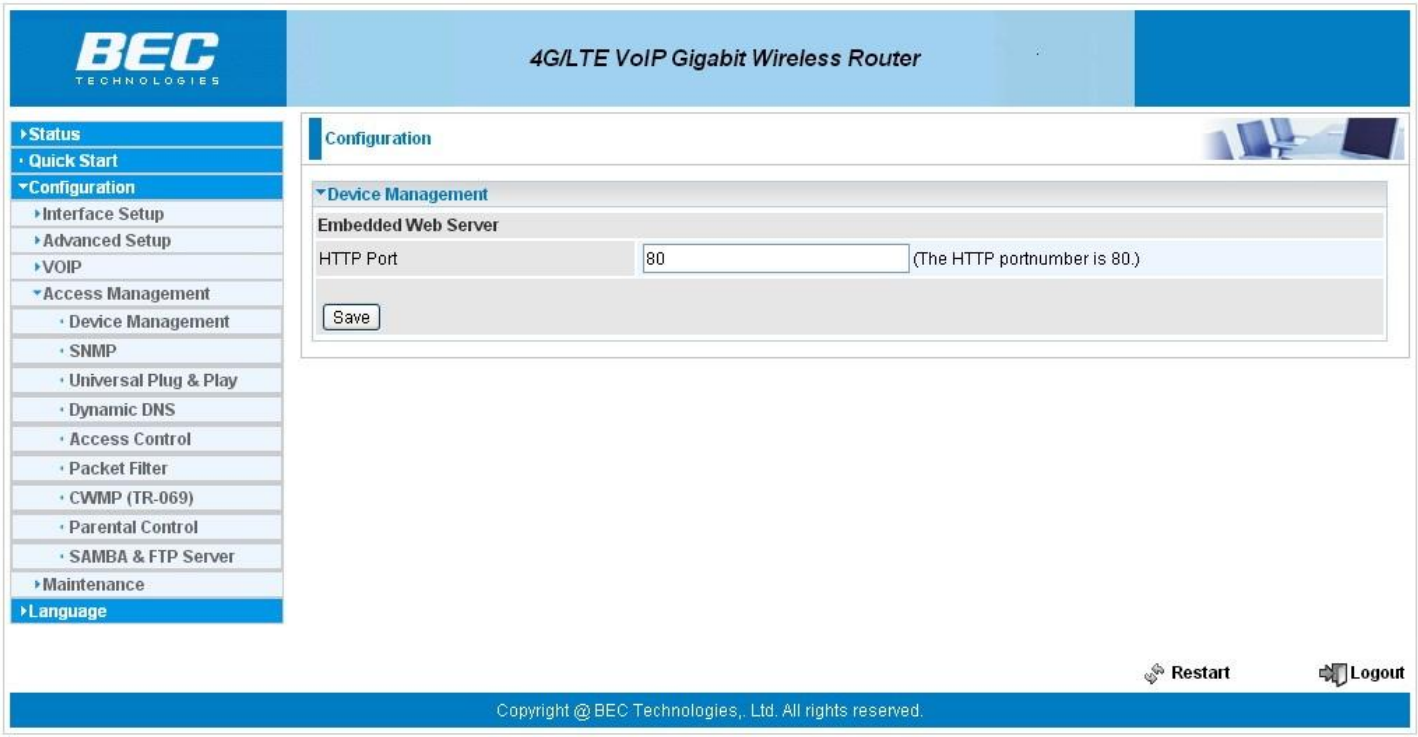
Step – 4: Bill presses flash to hold the call with Mark and return to original call with Larry.

Step – 5: Bill tells Larry that it is Mark and he wants to set up a conference with Mark.

Step – 6: Bill presses flash again to merge all 3 calls.

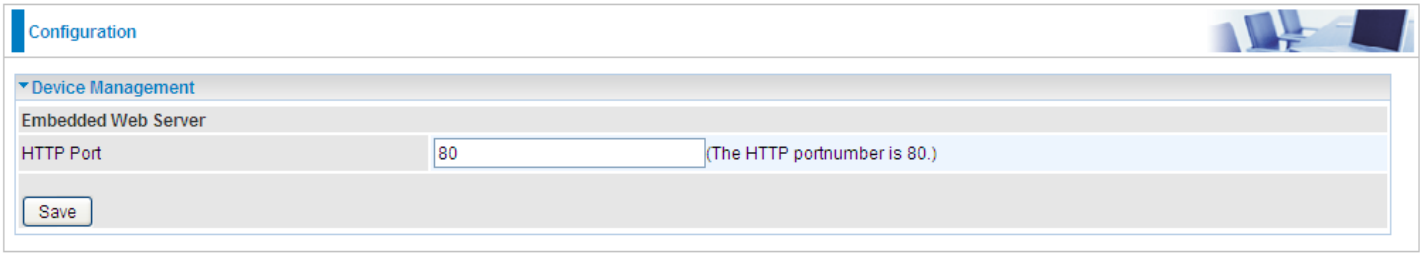
Step – 7: Bill, Larry and Mark hold a 3-way conference call from now on.

Access Management



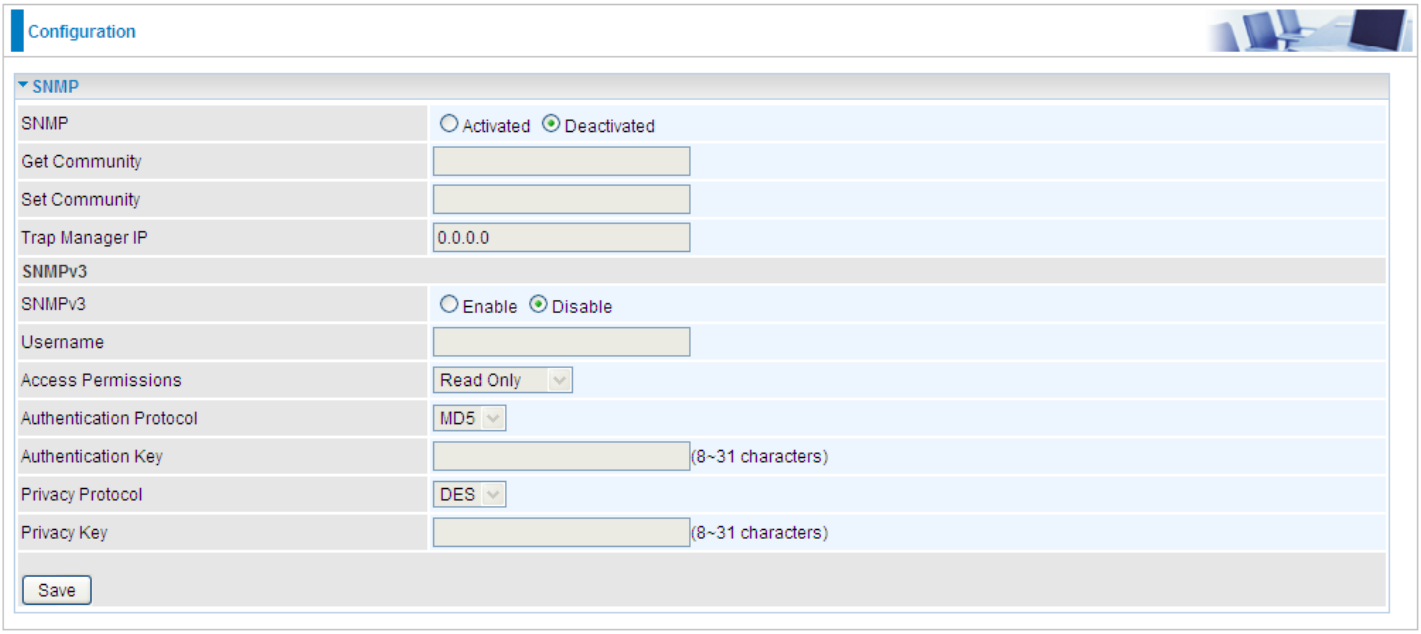
Device Management

Device management offers users a way to change the embedded web server accessing port, default 80. User can change the http port to 8080 or something else here.



SNMP

Simple Network Management Protocol (SNMP) is a protocol used for exchanging management information between network devices. SNMP is a member of the TCP/IP protocol suite. BEC 9800VN serves as a SNMP agent which allows a manager station to manage and monitor the router through the network.



SNMP: Select to enable SNMP feature.

Get Community: Type the Get Community, which is the password for the incoming Get-and-GetNext requests from the management station.

Set Community: Type the Set Community, which is the password for incoming Set requests from the management station.

Trap Manager IP: Enter the IP of the server receiving the trap message (when some exception occurs) sent by this SNMP agent.

SNMPv3: Enable to activate the SNMPv3.

User Name: Enter the name allowed to access the SNMP agent.

Access Permissions: Set the access permissions for the user; RO--read only and RW--read and writer.

Authentication Protocol: Select the authentication protocol, MD5 and SHA. SNMP agent can communicate with the manager station through authentication and encryption to secure the message exchange. Set the authentication and encryption information here and below.

Authentication Key: Set the authentication key, 8-31 characters.

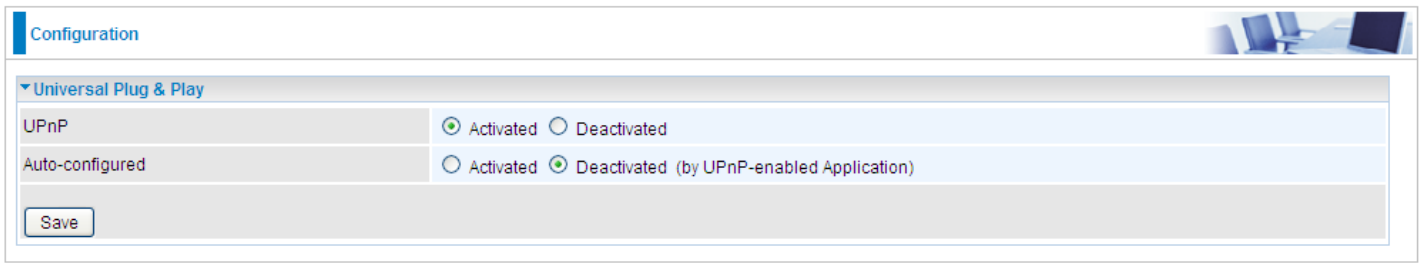
Privacy Protocol: Select the privacy mode, DES and AES.

Privacy Key: Set the privacy key, 8-31 characters.

Universal Plug & Play

UPnP offers peer-to-peer network connectivity for PCs and other network devices, along with control and data transfer between devices. UPnP offers many advantages for users running NAT routers through UPnP NAT Traversal, and on supported systems makes tasks such as port forwarding much easier by letting the application control the required settings, removing the need for the user to control advanced configuration of their device.

Both the user's Operating System and the relevant application must support UPnP in addition to the router. Windows XP and Windows ME natively support UPnP (when the component is installed), and Windows 98 users may install the Internet Connection Sharing client from Windows XP in order to support UPnP. Windows 2000 does not support UPnP.



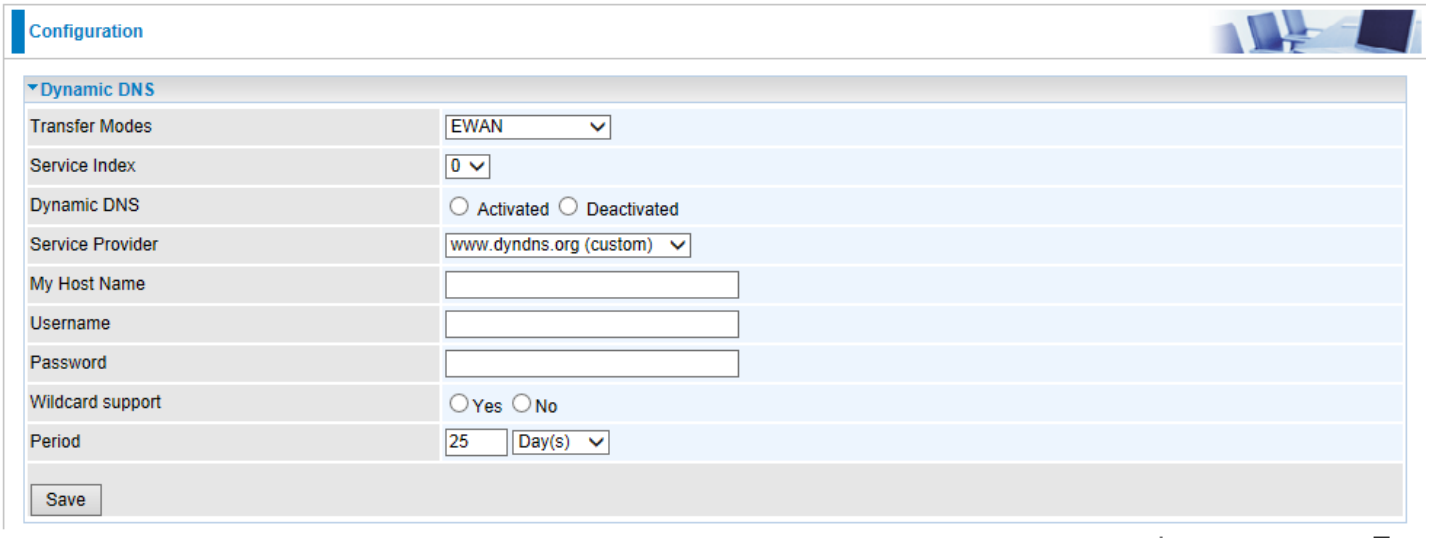
UPnP: Select this checkbox to activate UPnP. Be aware that anyone could use a UPnP application to open the web configuration's login screen without entering the BEC 9800VN' IP address

Auto-configured: Select this check box to allow UPnP-enabled applications to automatically configure the BEC 9800VN so that they can communicate through the BEC 9800VN, for example by using NAT traversal, UPnP applications automatically reserve a NAT forwarding port in order to communicate with another UPnP enabled device; this eliminates the need to manually configure port forwarding for the UPnP enabled application.

Dynamic DNS

The Dynamic DNS function allows you to alias a dynamic IP address to a static hostname, allowing users whose ISP does not assign them a static IP address to use a domain name. This is especially useful for hosting servers via your internet connection, so that anyone wishing to connect to you may use your domain name, rather than having to use your dynamic IP address, which changes from time to time. This dynamic IP address is the WAN IP address of the router, which is assigned to you by your ISP.

Here users can register different WAN interfaces with different DNS(es). But note that first users have to go to the Dynamic DNS registration service provider to register an account.



Transfer Modes: Select a WAN interface that will have a public IP address for the DDNS registration.

Dynamic DNS: Select this check box to activate Dynamic DNS.

Service Provider: Select from drop-down menu for the appropriate service provider, for example: www.dyndns.org.

My Host Name: Type the domain name assigned to your BEC 9800VN by your Dynamic DNS provider.

Username: Type your user name.

Password: Type the password.

Wildcard support: Select this check box to enable DYNDNS Wildcard.

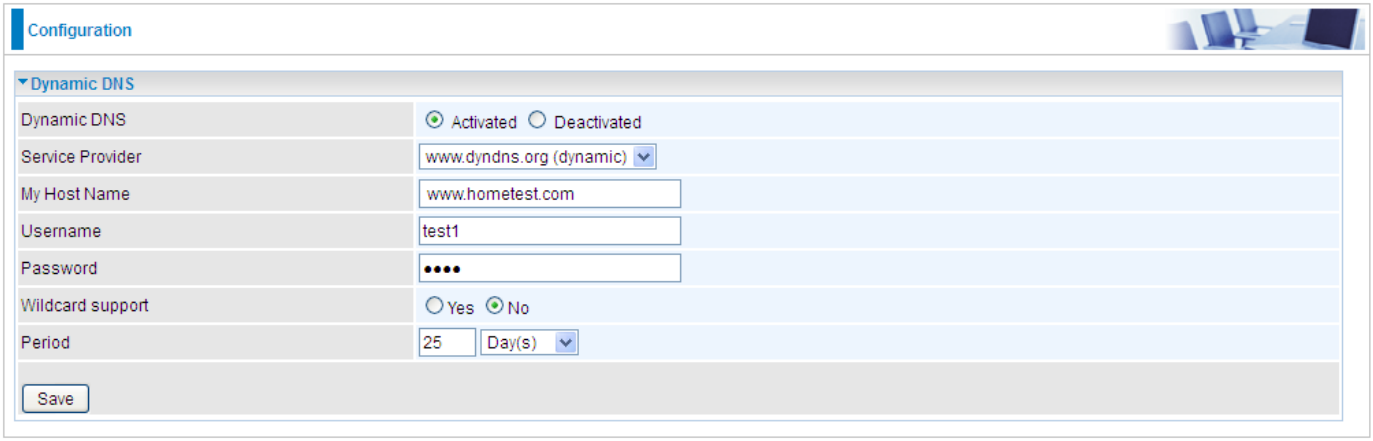
Period: Set the time period between updates, for the Router to exchange information with the DDNS server. In addition to updating periodically as per your settings, the router will perform an update when your dynamic IP address changes.

Example: How to register a DDNS account

Note first users have to go to the Dynamic DNS registration service provider to register an account.

User ***test1*** register a Dynamic Domain Names in DDNS provider **http://www.dyndns.org/** .

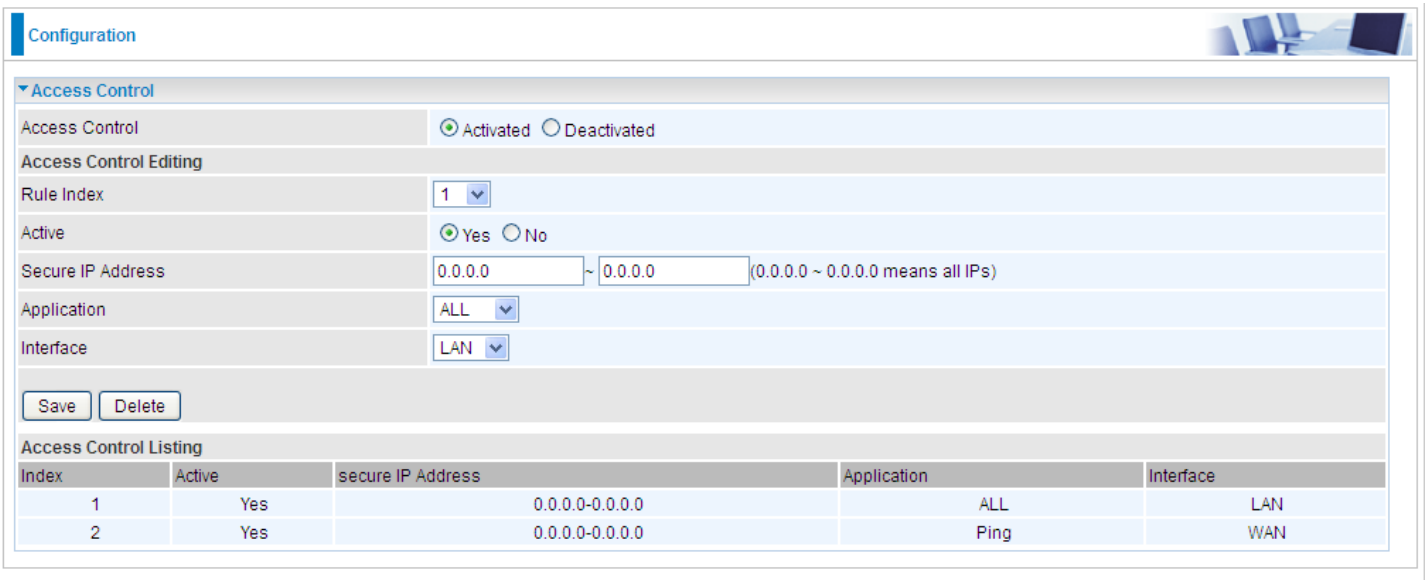
DDNS: www.hometest.com using username/password test/test



Access Control

Access Control Listing allows you to determine which services/protocols can access BEC 9800VN interface from which computers. It is a management tool aimed to allow IPs (set in secure IP address) to access specified embedded applications (Web, etc, user can set) through some specified interface (LAN, WAN or both). User can have an elaborate understanding in the examples below.

The maximum number of entries is 16.



Access Control: Select whether to make Access Control function available.

Rule Index: This is item number

Active: Select to activate the rule.

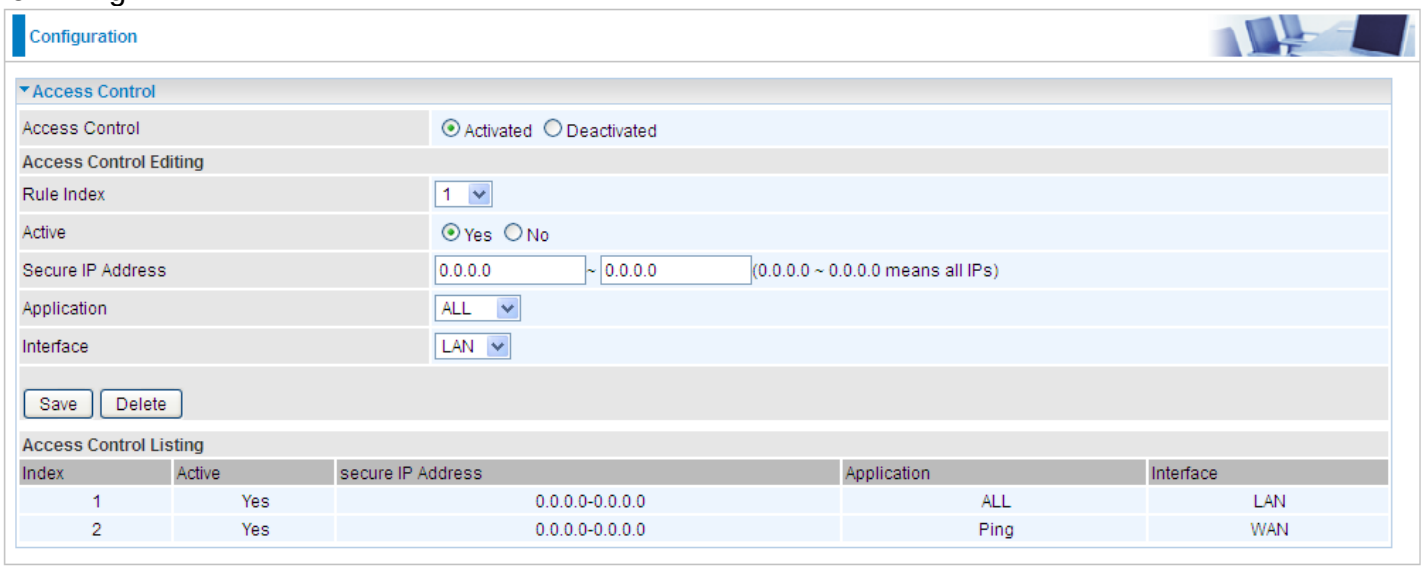
Secure IP Address: The default 0.0.0.0 allows any client to use this service to manage the BEC 9800VN. Type an IP address range to restrict access to the client(s) without a matching IP address.

Application: Choose a service that you want to all access to all the secure IP clients. The drop-down menu lists all the common used applications.

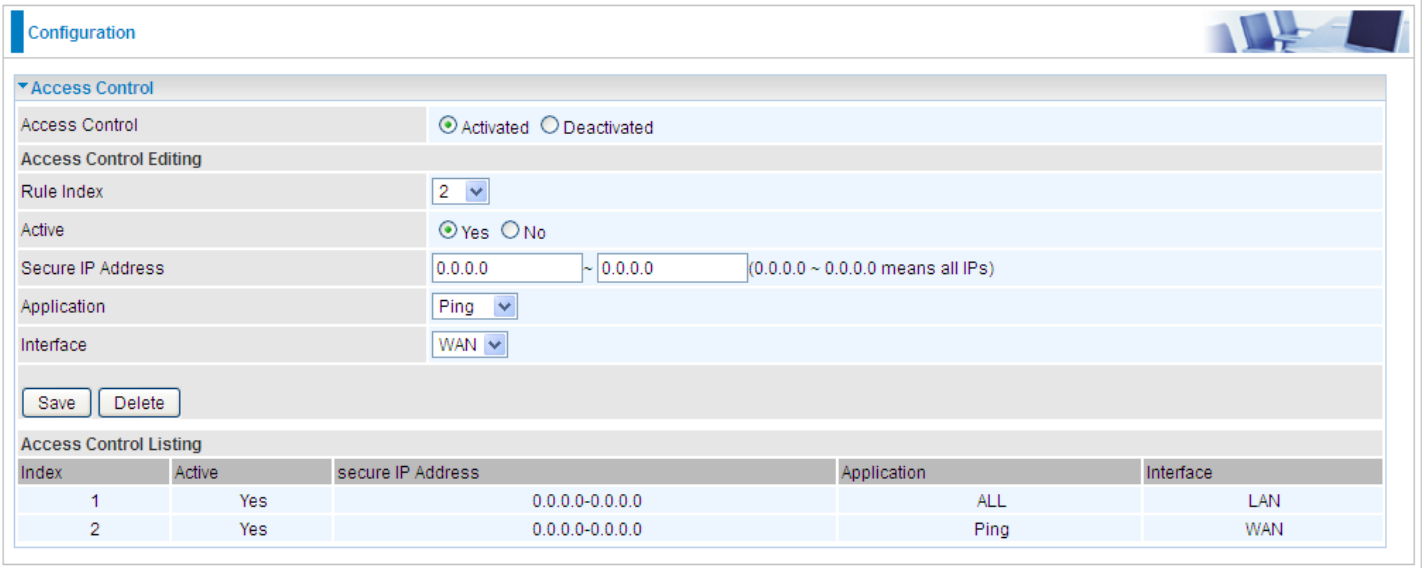
Interface: Select the access interface. Choices are **LAN**, **WAN** and **Both**.

By default, the “Access Control” has **two default rules**.

Default Rule 1: (Index 1), a rule to allow only clients from LAN to have access to all embedded applications (Web, FTP, etc). Under this situation, clients from WAN cannot access the router even from Ping.



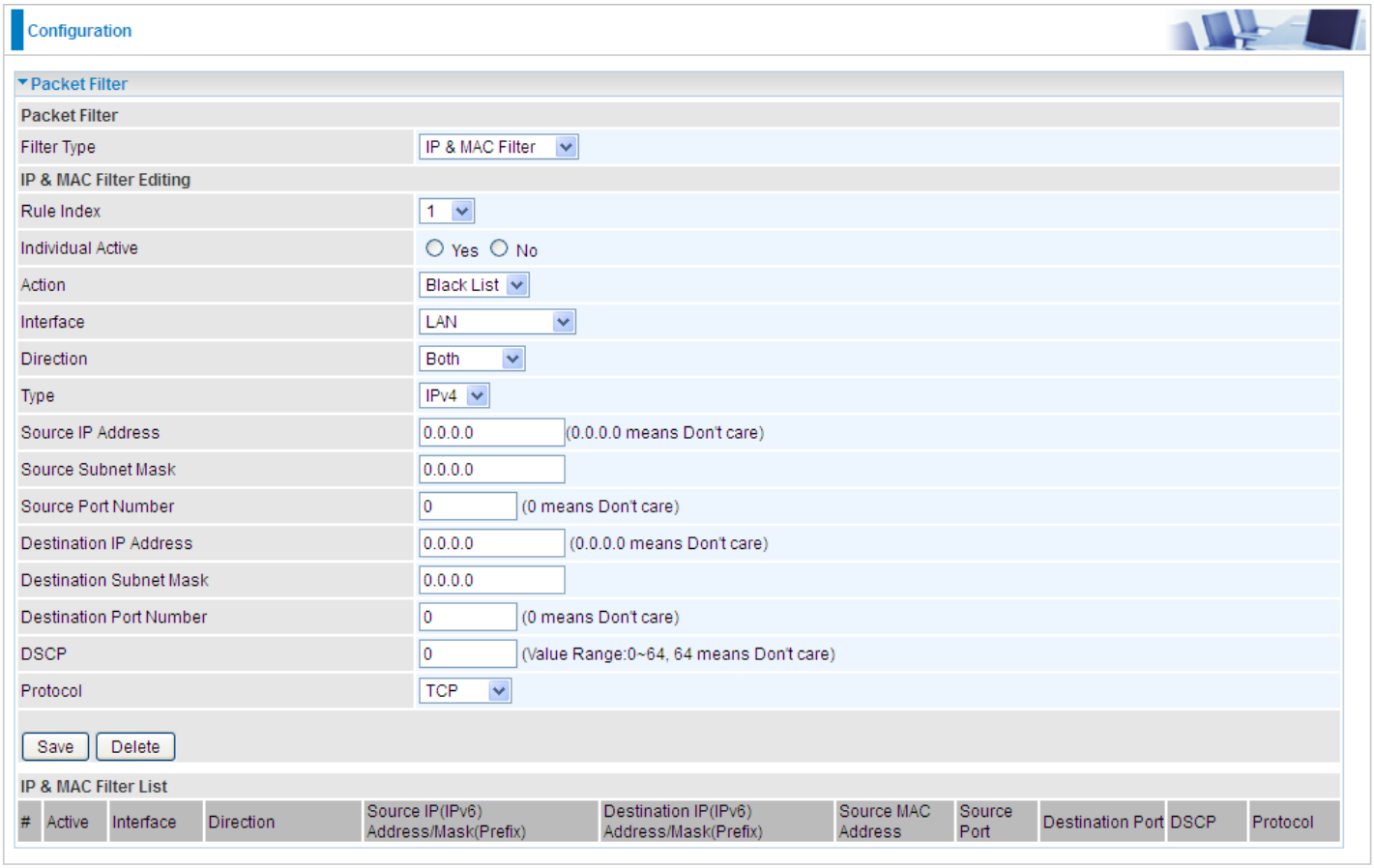
Default Rule 2: (Index 2), an ACL rule to open Ping to WAN side.



Packet Filter

You can filter the packages by MAC address, IP address, Protocol, Port number and Application or URL.

❖ Packet Filter - IP & MAC Filter



Packet Filter

Filter Type: There are three types "**IP & MAC Filter**", "**Application Filter**", and "**URL Filter**" that user can select for this filter rule. Here we set **IP & MAC Filter**.

IP & MAC Filter Editing

Rule Index: This is item number

Individual Active: Select **Yes** to activate the rule.

Action: This is how to deal with the packets matching the rule. Allow please select White List or block selecting Black List.

Interface: Select to determine which interface the rule will be applied to.

Direction: Select to determine whether the rule applies to outgoing packets, incoming packets or packets of both directions.

Type: Choose type of field you want to specify to monitor. Select "IPv4" for IPv4 address, port number and protocol. Select "IPv6" for IPv6 address, port number and protocol. Select "MAC" for MAC address.

Source IP Address: The source IP address of packets to be monitored. 0.0.0.0 means "Don't care".

Source Subnet Mask: Enter the subnet mask of the source network.

Source Port Number: The source port number of packets to be monitored. 0 means “Don’t care”.

Destination IP Address: The destination IP address of packets to be monitored. 0.0.0.0 means “Don’t care”.

Destination Subnet Mask: Enter the subnet mask of the destination network.

Destination Port Number: This is the Port that defines the application. (e.g. HTTP is port 80.)

DSCP: DSCP: Differentiated Services Code Point, it is recommended that this option be configured by an advanced user or keep 0. (0 means Don’t care.)

Protocol: Specify the packet type (TCP, UDP, ICMP, and ICMPv6) that the rule applies to.

IP/MAC Filter Listing

#: Item number**.**

Active: Whether the connection is currently active.

Interface: show the interface the rule applied to.

Direction: show the direction the rule applied to.

Source IP (IPv6) Address/Mask (Prefix): The source IP address or range of packets to be monitored.

Destination IP (IPv6) Address/Mask (Prefix): This is the destination subnet IP address.

Source MAC Address: show the MAC address of the rule applied.

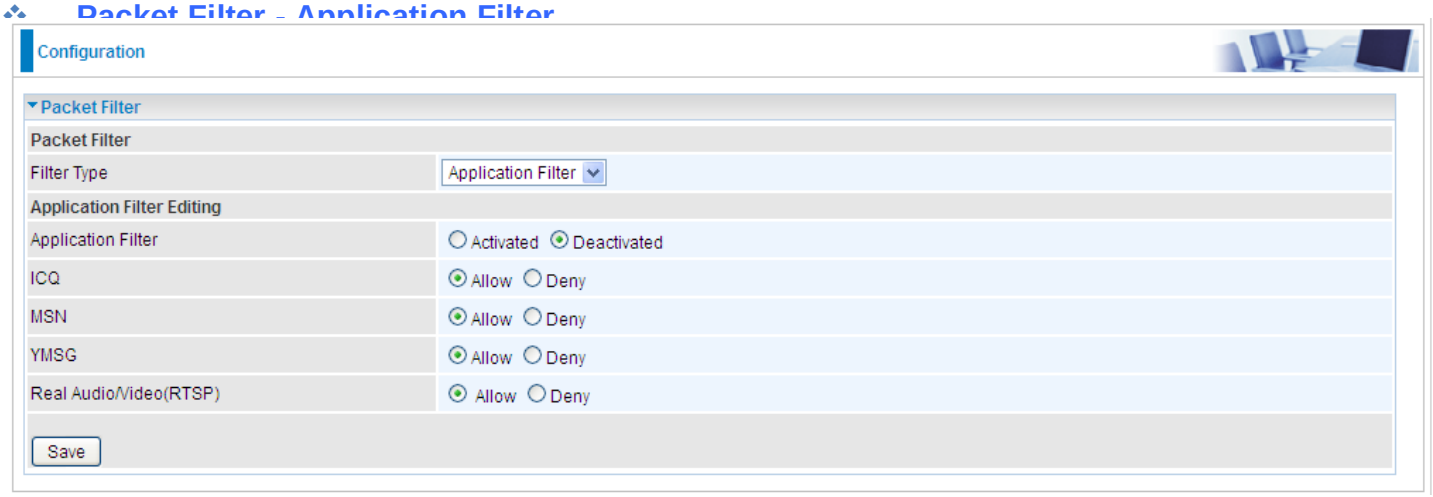
Source Port: The source port number of packets to be monitored.

Destination Port: This is the Port or Port Ranges that defines the application.

DSCP: show the set DSCP.

Protocol: It is the packet protocol type used by the application. Select either **TCP** or **UDP** or **ICMP or ICMPv6**

❖ Packet Filter - Application Filter



Application Filter: Select this option to Activated/Deactivated the Application filter.

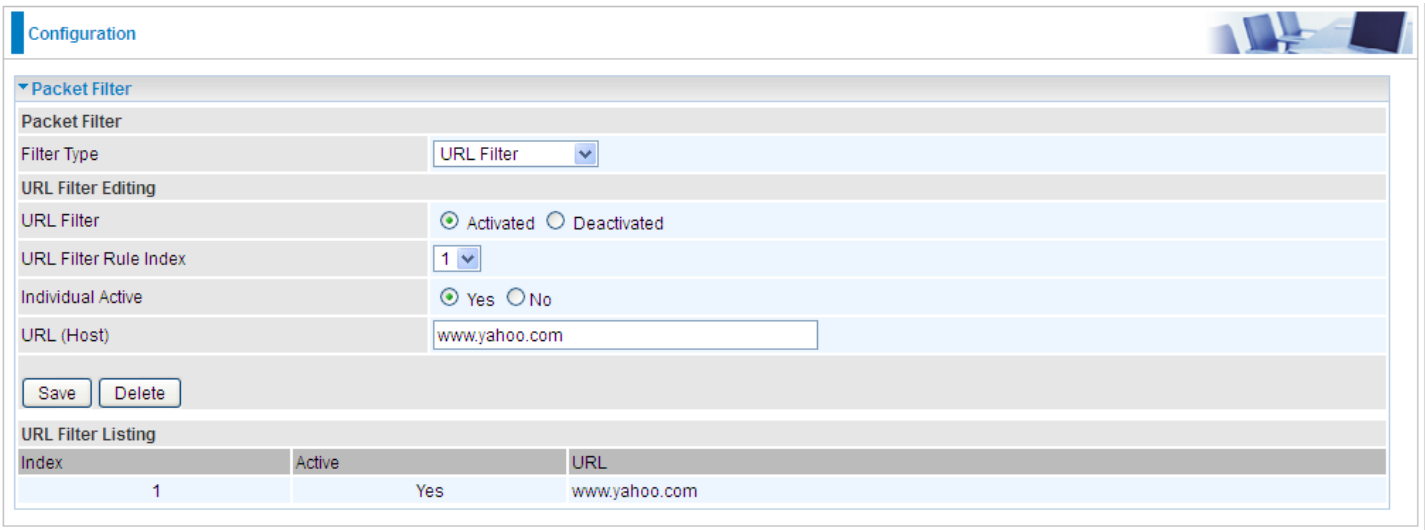
ICQ: Select this option to Allow/Deny ICQ.

MSN: Select this option to Allow/Deny MSN.

YMSG: Select this option to Allow/Deny Yahoo messenger.

Real Audio/Video (RTSP): Select this option to Allow/Deny Real Audio/Video (RTSP).

❖ Packet Filter - URL Filter



URL Filter: Select **Activated** to enable URL Filter.

URL Filter Rule Index: This is item number.

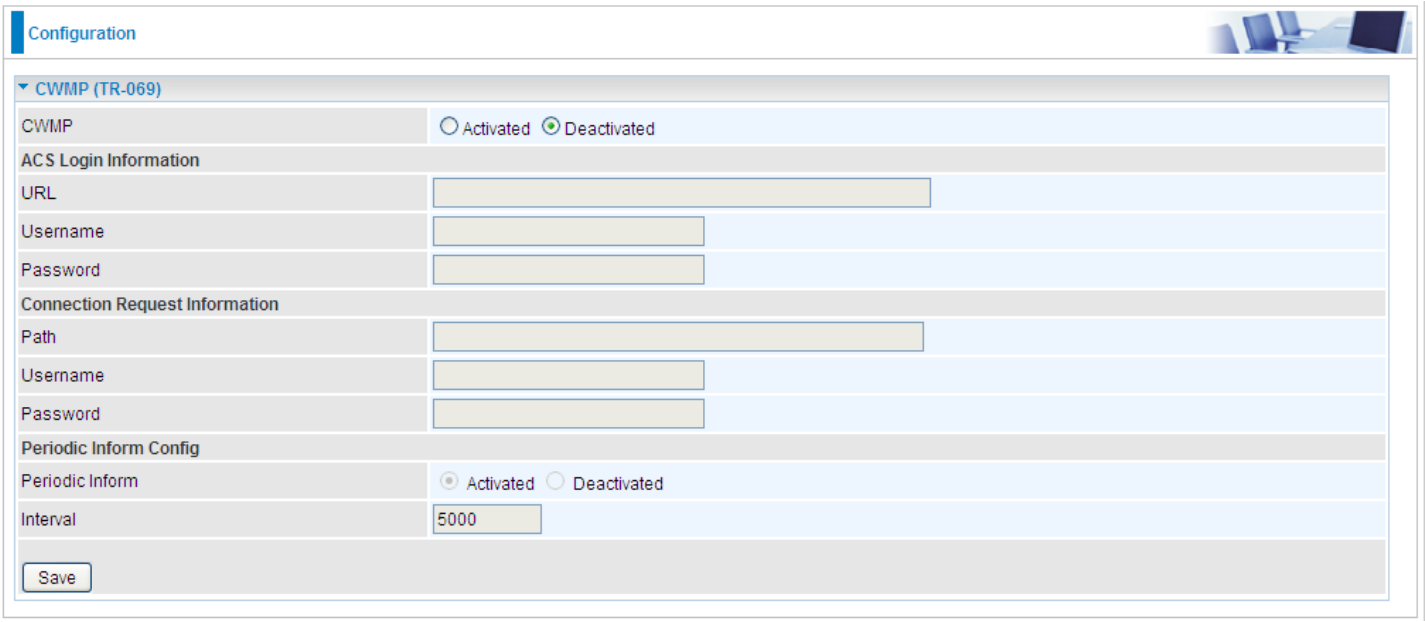
Individual Active: To give control to the specific URL access individually, for example, you want to prohibit access to www.yahoo.com, please first press Activated in “URL Filter” field, and also Yes in “Individual Active” field; if some time you want to allow access to this URL, you simply select No in individual active field. In a word, the command serves as a switch to the access of some specific URL with the filter on.

URL (Host): Specified URL which is prohibited from accessing.

CWMP (TR-069)

CWMP, short for CPE WAN Management Protocol, also called TR069 is a Broadband Forum technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices. It defines an application layer protocol for remote management of end-user devices.

As a bidirectional SOAP/HTTP based protocol it can provides the communication between customer premises equipment (CPE) and Auto Configuration Server (ACS). It includes both a safe configuration and the control of other CPE management functions within an integrated framework. In the course of the booming broadband market, the number of different internet access possibilities grew as well (e.g. modems, routers, gateways, set-top box, VoIP-phones).At the same time the configuration of this equipment became more complicated –too complicated for end-users. For this reason, TR-069 was developed. It provides the possibility of auto configuration of the access types. Using TR-069 the terminals can get in contact with the Auto Configuration Servers (ACS) and establish the configuration automatically and let ACS configure CPE automatically.



CWMP: Select activated to enable CWMP.

ACS Login Information

URL: Enter the ACS server login URL.

User Name: Specify the ACS User Name for ACS authentication to the connection from CPE.

Password: Enter the ACS server login password.

Connection Request Information

Path: Local path in HTTP URL for an ACS to make a Connection Request notification to the CPE.

Username: Username used to authenticate an ACS making a Connection Request to the CPE.

Password: Password used to authenticate an ACS making a Connection Request to the CPE.

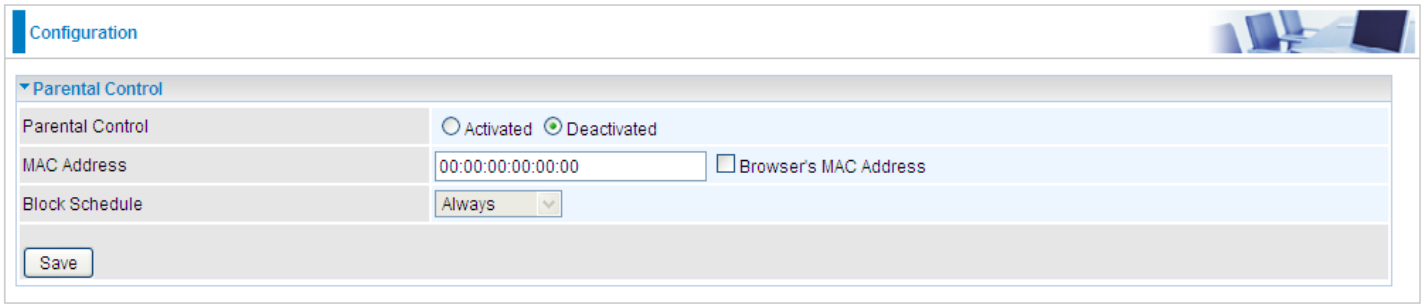
Periodic Inform Config

Periodic Inform: Select Activated to authorize the router to send an Inform message to the ACS automatically.

Interval(s): Specify the inform interval time (sec) which CPE used to periodically send inform message to automatically connect to ACS. When the inform interval time arrives, the CPE will send inform message to automatically connect to ACS.

Parental Control

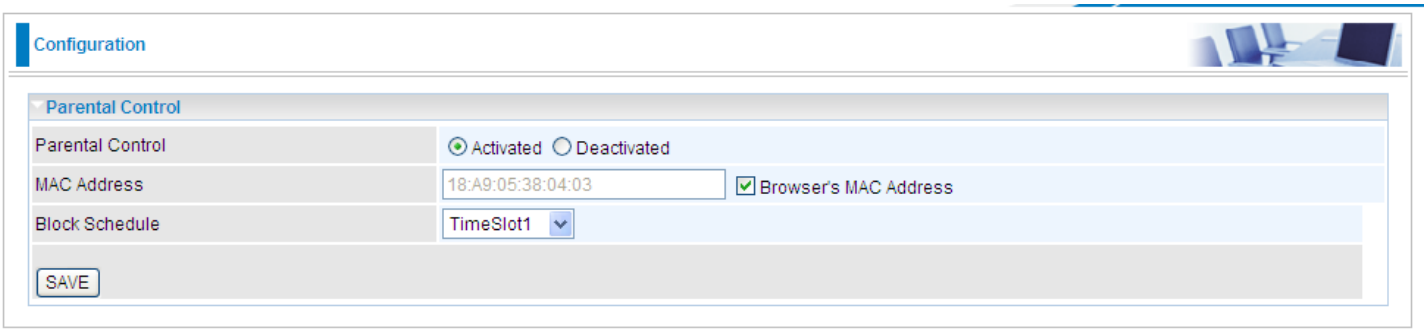
With this feature, router can reject to provide **Internet** services to the specified computer during some specified time interval. This can be very useful for parents to give control to children using computer without restraint.



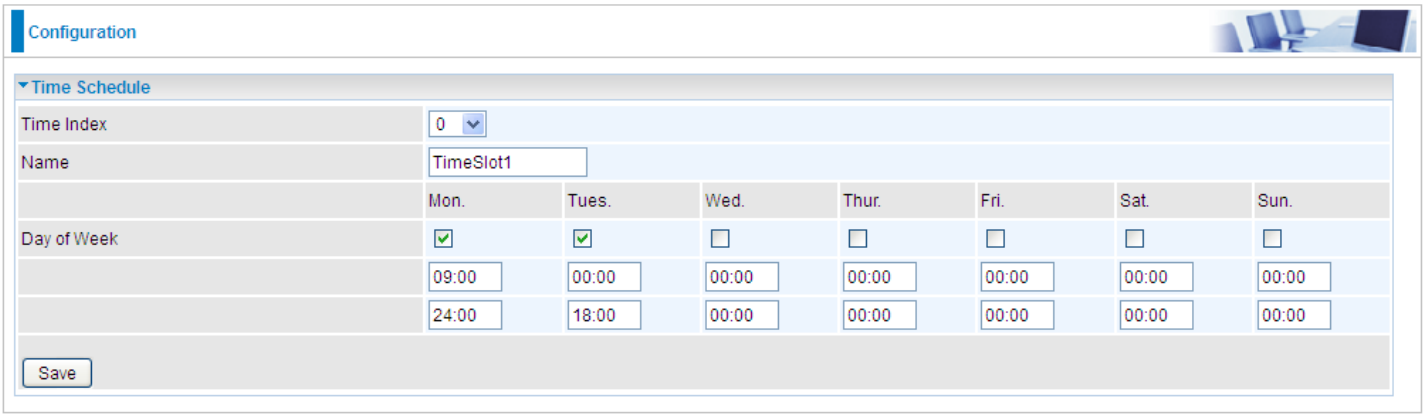
Parent Control: Select Activated to enable this feature.

MAC Address: Type the MAC address(es) you want to block to access the internet (access to the router is sustained). The format of MAC address could be: xx:xx:xx:xx:xx:xx . If you want to set restriction to the Browser PC, you can directly check the checkbox of Browser's MAC Address.

Block Schedule: Select a timeslot throughout which the above set MAC is restricted to access internet. See Time Schedule to set the exact timeslot.

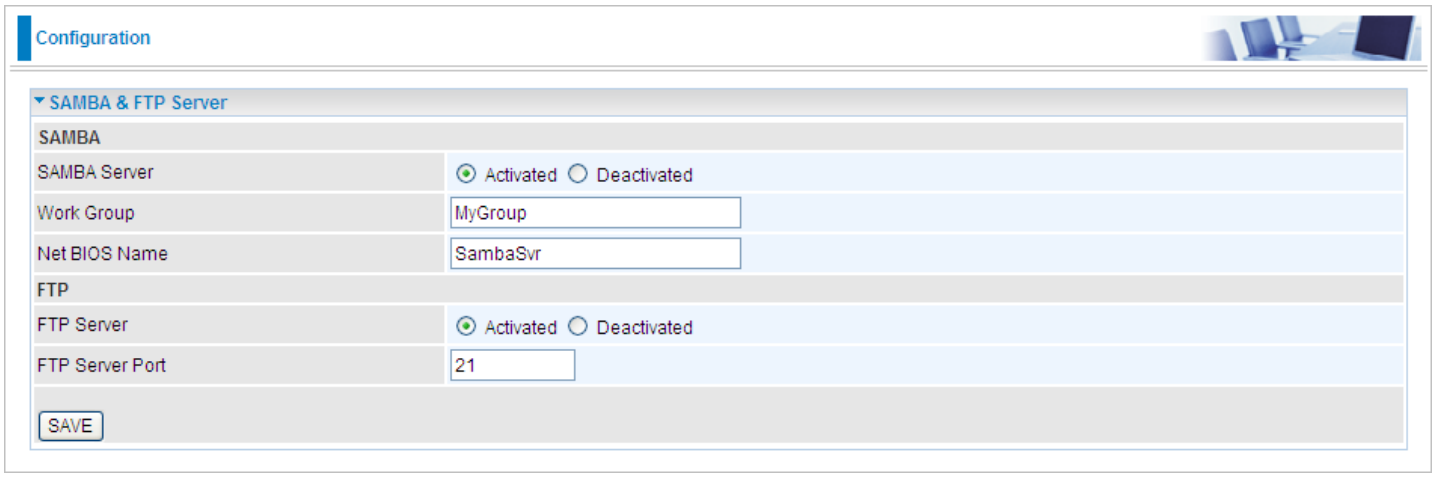


Timeslot1 at Time Schedule:



SAMBA & FTP Server

Samba and FTP are served as network sharing.



SAMBA Server: Activated to enable SAMBA sharing.

Work Group: The same mechanism like in Microsoft work group, please set the Work Group name.

NetBIOS Name: The sharing NetBIOS name.

FTP Server: Activated to enable FTP sharing.

FTP Server Port: Set the working port. Well-known one is 21. User can change it.

SAMBA/FTP login account:

- **Default user:** admin/admin, it is the administrative user and a super user, it has the full authority of SAMBA /FTP access and operation permission of objects in SAMBA and FTP server.
- **New user:** users can create new user(s) to grant it (them) access and permission to the SAMBA & FTP server.

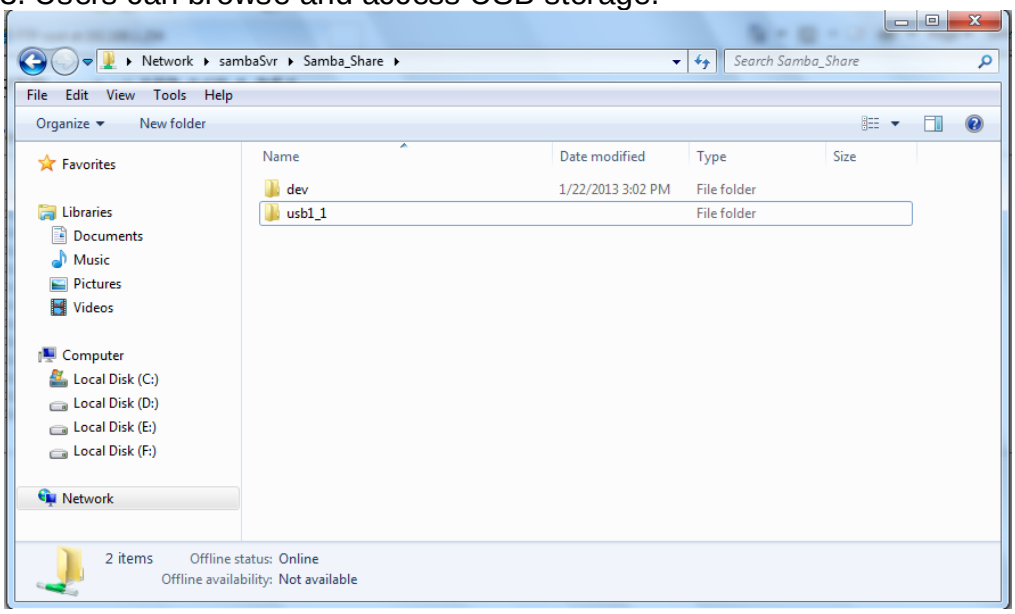
Please see User Management.

Example: How to setup Samb

1. Go directly to Start > Run (enter \\192,168,1,254 (from LAN side), \\SambaSvr , but if you enter \\SambaSvr, please be sure your working PC is in the same workgroup as set in the samba server set above.)

2. Enter the Username and password.

3. Users can browse and access USB storage.



Example: How to setup FTP：

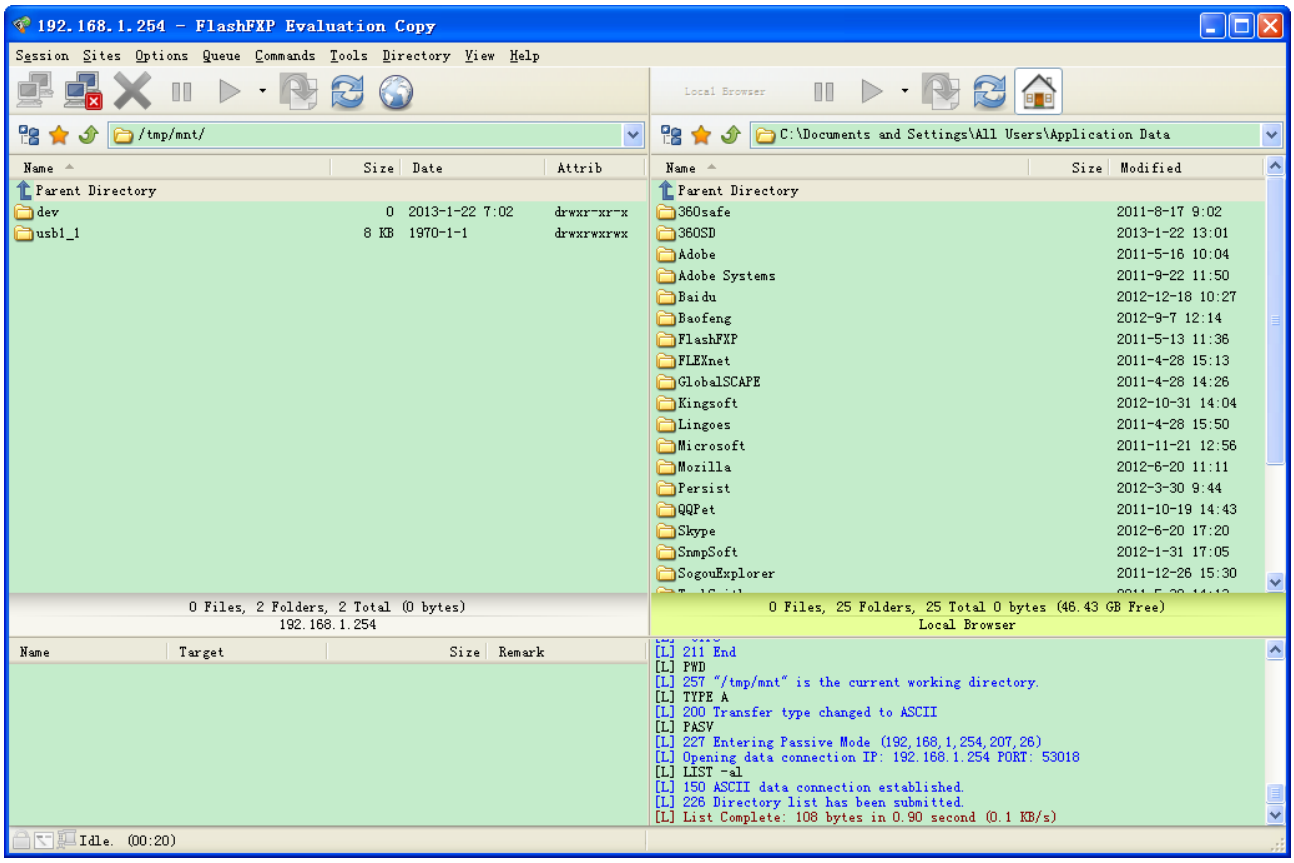
1. **Access via FTP tools**

Take popular FTP tool of FlashFXP for example:

1) Open FlashFXP

2) Create ftp sites (LAN IP / WAN IP, 192.168.1.254, and set the account, port).

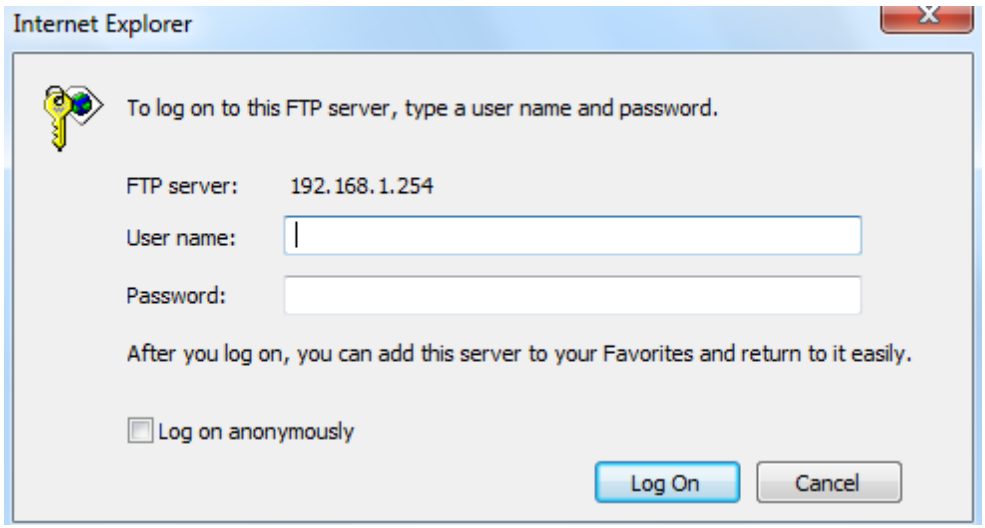
3) Connect to the ftp site.


192.168.1.254 - FlashFXP Evaluation Copy
Session Sites Options Queue Commands Tools Directory View Help
/tmp/mnt/
C:\Documents and Settings\All Users\Application Data
Name Size Date Attrib
Parent Directory
dev 0 2013-1-22 7:02 drwxr-xr-x
usb1_1 8 KB 1970-1-1 drwxrwxrwx
Name Size Modified
Parent Directory
360safe 2011-8-17 9:02
360SD 2013-1-22 13:01
Adobe 2011-5-16 10:04
Adobe Systems 2011-9-22 11:50
Baidu 2012-12-18 10:27
Baofeng 2012-9-7 12:14
FlashFXP 2011-5-13 11:36
FLEXnet 2011-4-28 15:13
GlobalSCAPE 2011-4-28 14:26
Kingsoft 2012-10-31 14:04
Lingoes 2011-4-28 15:50
Microsoft 2011-11-21 12:56
Mozilla 2012-6-20 11:11
Persist 2012-3-30 9:44
QQPet 2011-10-19 14:43
Skype 2012-6-20 17:20
SnmpSoft 2012-1-31 17:05
SogouExplorer 2011-12-26 15:30
0 Files, 2 Folders, 2 Total (0 bytes)
192.168.1.254
0 Files, 25 Folders, 25 Total 0 bytes (46.43 GB Free)
Local Browser
Name Target Size Remark
[L] 211 End
[L] PWD
[L] 257 "/tmp/mnt" is the current working directory.
[L] TYPE A
[L] 200 Transfer type changed to ASCII
[L] PASV
[L] 227 Entering Passive Mode (192,168,1,254,207,26)
[L] Opening data connection IP: 192.168.1.254 PORT: 53018
[L] LIST -al
[L] 150 ASCII data connection established.
[L] 226 Directory list has been submitted.
[L] List Complete: 108 bytes in 0.90 second (0.1 KB/s)
Idle. (00:20)

2. **Web FTP access**

1) Enter ftp://192.168.1.254 at the address bar of the web page.

2) Enter the account's username and password.


Internet Explorer
To log on to this FTP server, type a user name and password.
FTP server: 192.168.1.254
User name:
Password:
After you log on, you can add this server to your Favorites and return to it easily.
Log on anonymously
Log On
Cancel

Maintenance

Maintenance equipments the users with the ability of maintaining the device as well as examining the connectivity of the WAN connections, including **User Management**, **Time Zone**, **License**, **Firmware & Configuration**, **System Restart**, and **Diagnostic Tool.**

User Management

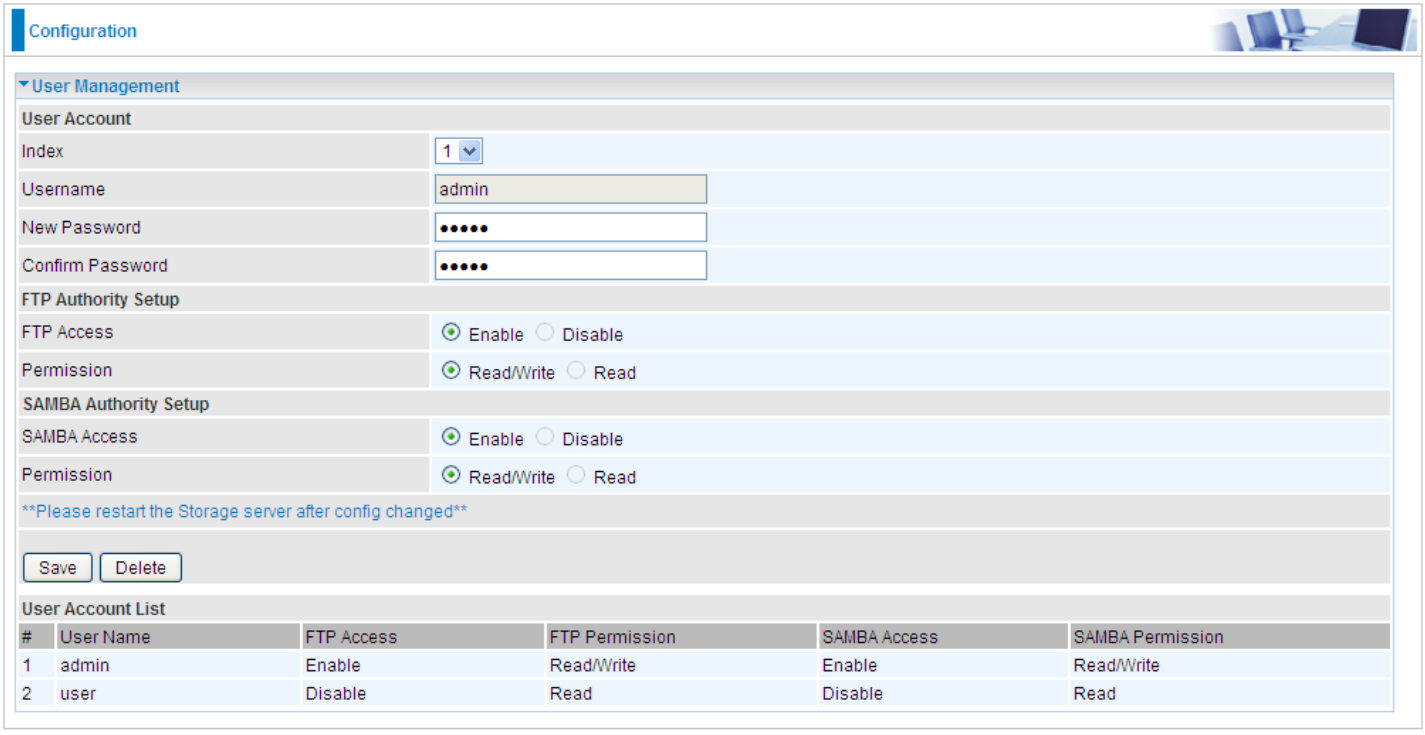
User Management controls the Router Web GUI permission, FTP/SAMBA access to the specific account.

In factory setting, the default accounts are **admin/admin** and **user/user.** The default root account admin has been authorized to web access of router, Samba access, and FTP access. **user/user** is equipment with limited access (specified by advanced users with admin account) to router web, and FTP/SAMBA . A total of **6** other accounts can be created to grant access to the access of Samba and FTP and web page (need to be specified).

Note: Please go to SAMBA & FTP Server to re-activate FTP and SAMBA server to enable the changes to the FTP and SAMBA account set here.

❖ Admin / Admin

admin/admin is the root account provided by our router.



User Setup

Index: User account index, total is 8.

User Name: Users can create account(s) to give it (them) access to SAMBA and FTP.

New Password: Enter a new password for this user account.

Confirmed Password: Re-enter the new password again; you must enter the password exactly the same as in the previous field

FTP Authority Setup

FTP Access: Enable to grant the user access to the FTP server.

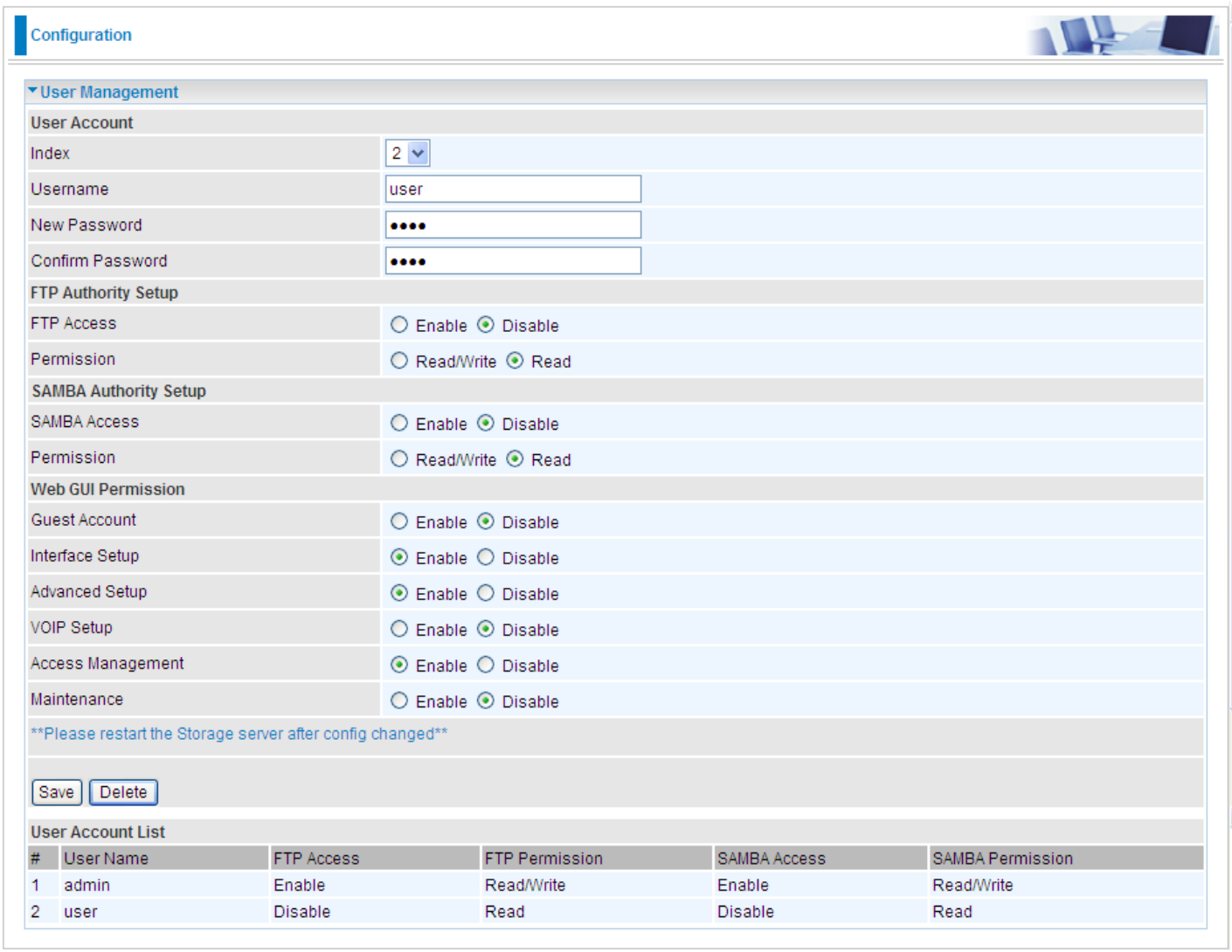
Permission: Set the operation permission for the user, Read/Write or Read.

SAMBA Authority

SAMBA Access: Enable to grant the user access to the SAMBA server.

Permission: Set the operation permission for the user, Read/Write or Read.

❖ User / User and/or Adding additonal user accounts



User Setup

Index: User account index, total is 8.

User Name: Users can create account(s) to give it (them) access to SAMBA and FTP.

New Password: Type the password for the user account.

Confirmed Password: Type password again for confirmation.

FTP Authority Setup

FTP Access: Enable to grant the user access to the FTP server.

Permission: Set the operation permission for the user, Read/Write or Read.

SAMBA Authority

SAMBA Access: Enable to grant the user access to the SAMBA server.

Permission: Set the operation permission for the user, Read/Write or Read.

Time Zone

The router does not have a real time clock on board; instead, it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server outside your network. Choose your local time zone. After a successful connection to the Internet, the router will retrieve the correct local time from the SNTP server you have specified. If you prefer to specify an SNTP server other than the default, simply enter its IP address as shown above. Your ISP may provide an SNTP server for you to use.

Synchronize time with: Select the methods to synchronize the time.

- **NTP Server automatically:** To synchronize time with the NTP server.
- **PC's Clock:** To synchronize time with the PC's clock.
- **Manually:** Select this, user need to set the time yourself manually.

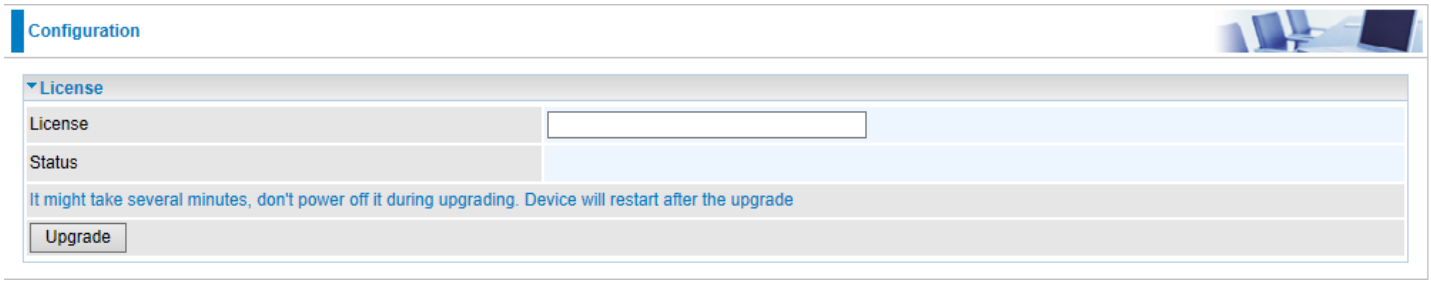
Time Zone: Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).

Daylight Saving: Select this option if you use daylight savings time.

NTP Server Address: Enter the IP address of your time server. Check with your ISP/network administrator if you are unsure of this information.

License

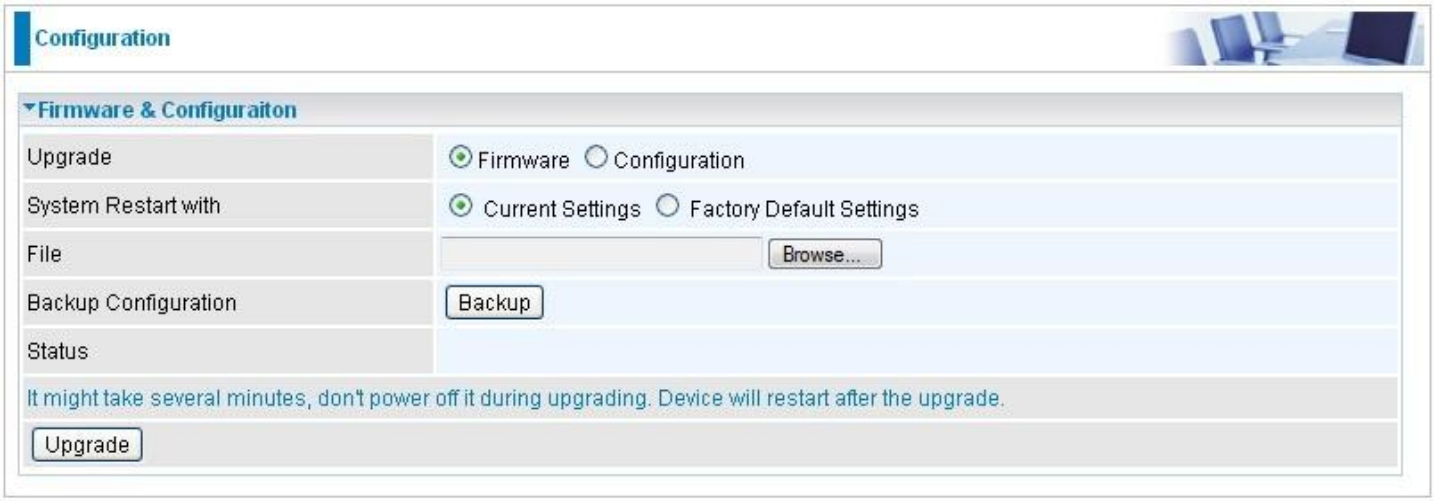
This feature is only avaiable for Internet/Local Service Provider.



Firmware & Configuration

Firmware is the software that controls the hardware and provides all functionalities which are available in the GUI. This software may be improved and/or modified; your BEC 9800VN provides an easy way to update the code to take advantage of the changes. .

To upgrade the firmware of BEC 9800VN, you should download or copy the firmware to your local environment first. Press the **"Browse…"** button to specify the path of the firmware file. Then, click **"Upgrade"** to start upgrading. When the procedure is completed, BEC 9800VN will reset automatically to make the new firmware work.



Upgrade: Choose Firmware or Configuration you want to update.

System Restart with:

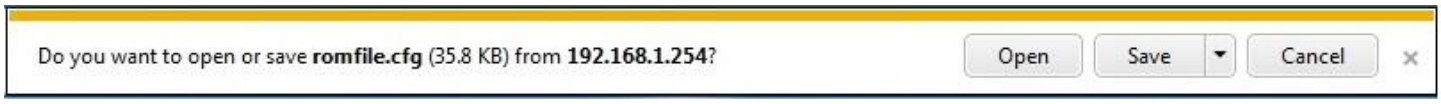
- **Current Settings:** Restart the device with the current settings automatically when finishing upgrading.
- **Factory Default Settings:** Restart the device with factory default settings automatically when finishing upgrading.

File: Type in the location of the file you want to upload in this field or click **Browse** to find it.

Browse: Click **Browse...** to find the configuration file or firmware file you want to upload. Remember that you must extract / decompress / unzip the .zip files before you can upload them.

Backup Configuration: Click **Backup** button to back up the current running configuration file and save it to your computer in the event that you need this configuration file to be restored back to your

BEC 9800VN device when making false configurations and want to restore to the original settings.

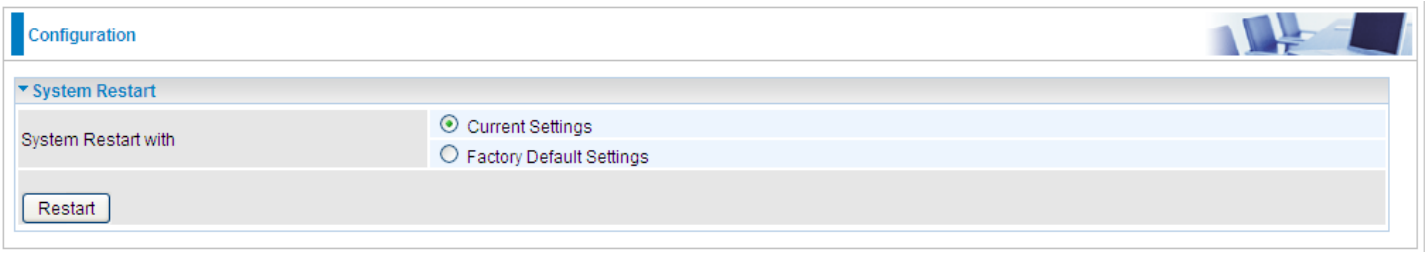


UPGRADE: Click **UPGRADE** to begin the upload process. This process may take up to two minutes.

DO NOT turn off / power off the device or interrupt the firmware upgrading while it is still in process. Improper operation could damage your BEC 9800VN.

System Restart

Click **System Restart** with option **Current Settings** to reboot your router.



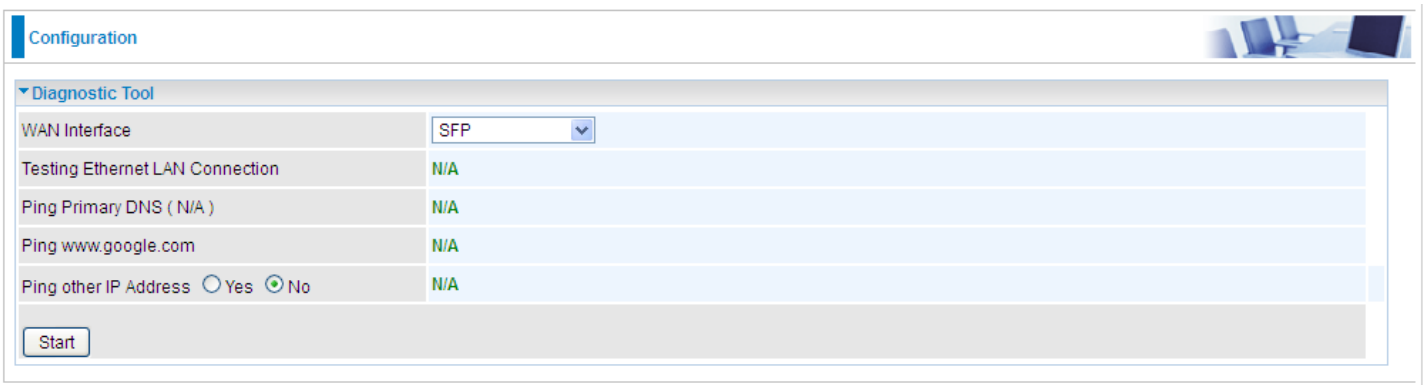
If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select ***Factory Default Settings*** to restore to factory default settings.

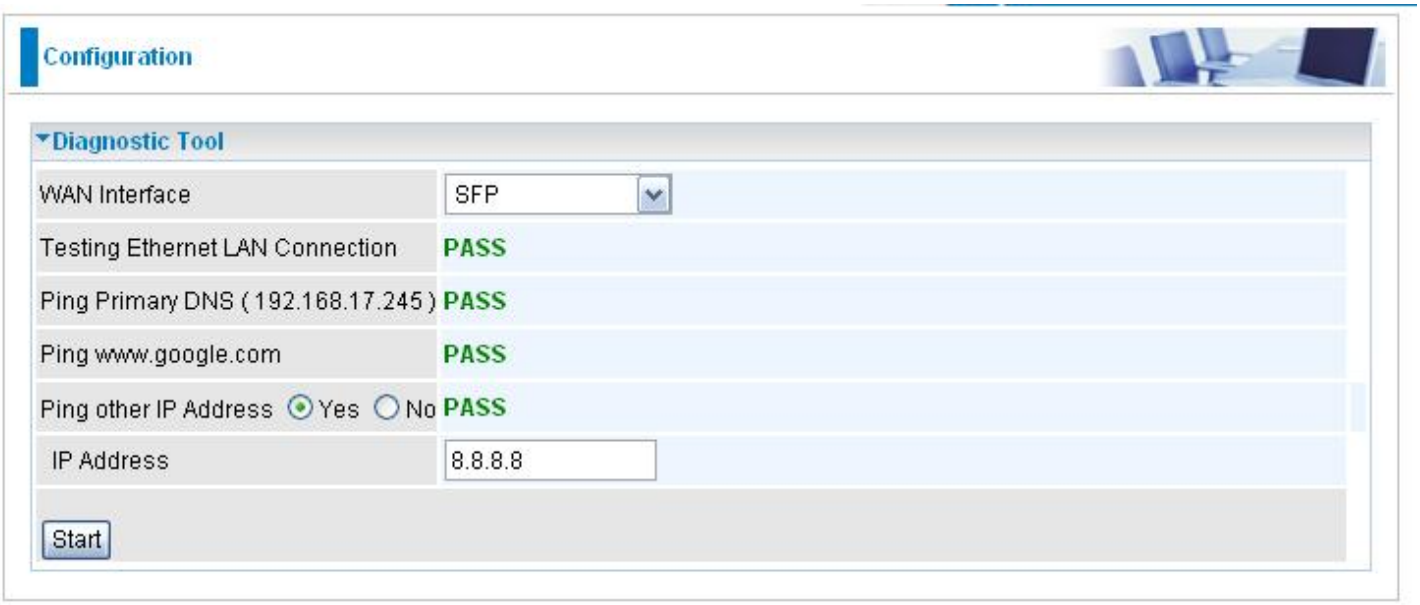
You may also restore your router to factory settings by holding the small Reset pinhole button on the back of your router in about more than 6s seconds whilst the router is turned on.

Diagnostics Tool

The Diagnostic Test page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides.

SFP:





EWAN:

Click START to begin to diagnose the connection.

Chapter 5: Troubleshooting

If your **BEC 9800VN** is not functioning properly, you can refer to this chapter for simple troubleshooting before contacting your service provider support. This can save you time and effort but if symptoms persist, consult your service provider.

Problems with the Router

Problem	Suggested Action
None of the LEDs is on when you turn on the router	Check the connection between the router and the adapter. If the problem persists, most likely it is due to the malfunction of your hardware. Please contact your service provider or BEC for technical support.
You have forgotten your login username or password	Try the default username "admin" and password "admin". If this fails, you can restore your router to its factory settings by pressing the reset button on the device rear side.

Problem with LAN Interface

Problem	Suggested Action
Cannot PING any PC on LAN	Check the Ethernet LEDs on the front panel. The LED should be on for the port that has a PC connected. If it does not lit, check to see if the cable between your router and the PC is properly connected. Make sure you have first uninstalled your firewall program before troubleshooting.
	Verify that the IP address and the subnet mask are consistent for both the router and the workstations.

Recovery Procedures

Problem	Suggested Action
- The front LEDs display incorrectly **- Still cannot access to the router management interface after pressing the RESET button.** **- Software / Firmware upgrade failure**	1. Power on the router, once the Power LED lit red, please press this reset button using the end of paper clip or other small pointed object immediately. 2. The router's emergency-reflash web interface will then be accessible via http://192.168.1.1 where you can upload a firmware image to restore the router to a functional state, Please note that the router will only respond with its web interface at this address (192.168.1.1), and will not respond to ping request from your PC or other telnet operations.

APPENDIX: PRODUCT SUPPORT & CONTACT

If you come across any problems please contact the dealer from where you purchased your product.

Contact BEC @ http://www.bectechnologies.net

MAC OS is a registered Trademark of Apple Computer, Inc.

Windows 7/98, Windows NT, Windows 2000, Windows ME, Windows XP, and Windows Vista are registered Trademarks of Microsoft Corporation.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference

(2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. . This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Co-location statement

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.